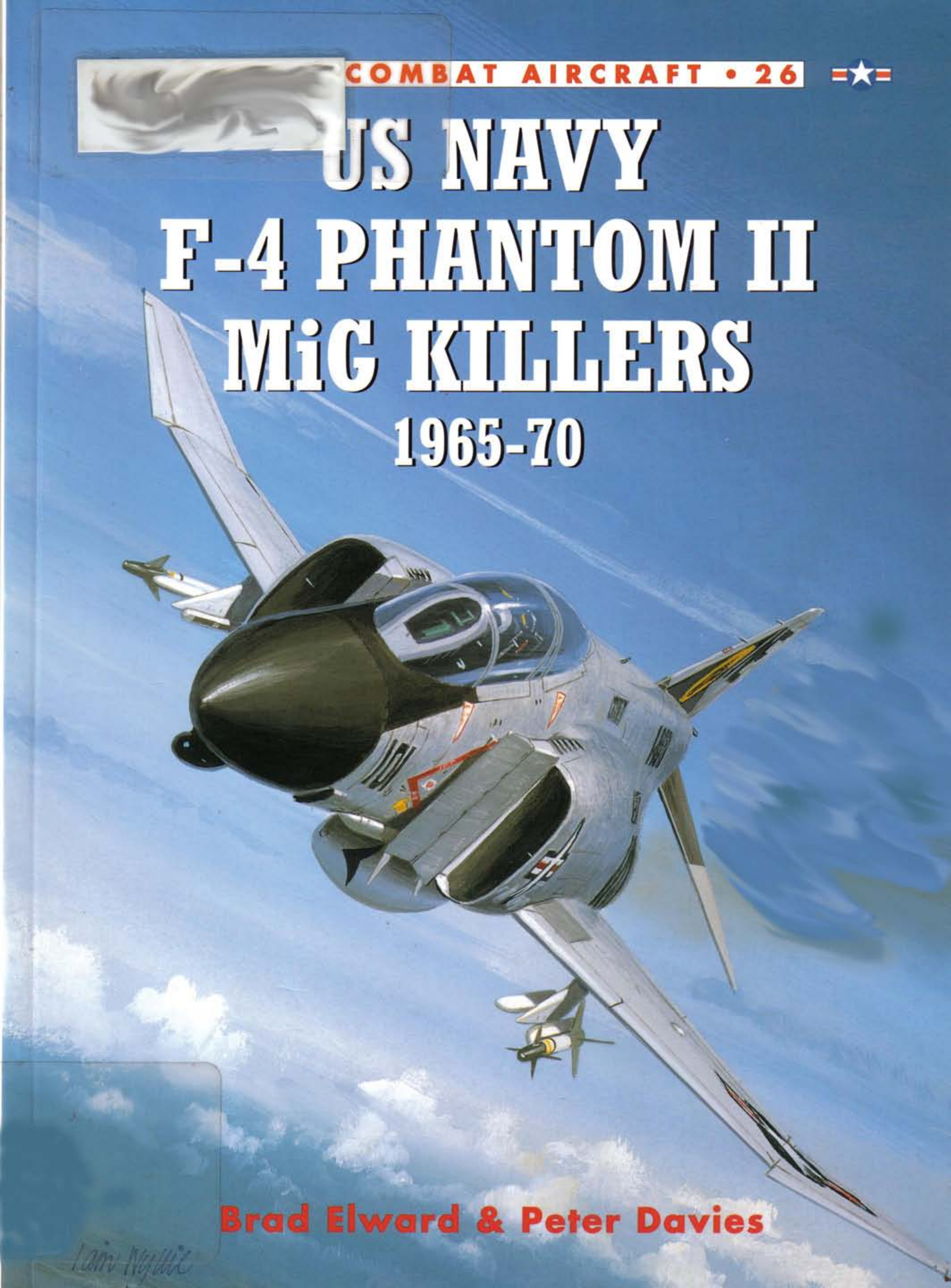

COMBAT AIRCRAFT • 26

US NAVY F-4 PHANTOM II MiG KILLERS

1965-70

Brad Elward & Peter Davies

BRAD ELWARD is an attorney-at-law based in Peoria, Illinois. He has written several volumes on post-war naval aviation in the past four years. This is his first book for Osprey, and his companion volume on US Navy F-4 Phantom II MiG Killers 1972–73 is due for publication in early 2002.

PETER DAVIES has written or co-written nine books on modern American combat aircraft, including the standard reference work on US Navy and Marine Corps Phantom II operations, *Gray Ghosts*. Based in Bristol, Peter is also presently working with Brad Elward on the follow-on volume on Navy F-4 MiG Killers.

OSPREY COMBAT AIRCRAFT • 26

US NAVY F-4 PHANTOM II MiG KILLERS

1965-70

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SERIES EDITOR: TONY HOLMES

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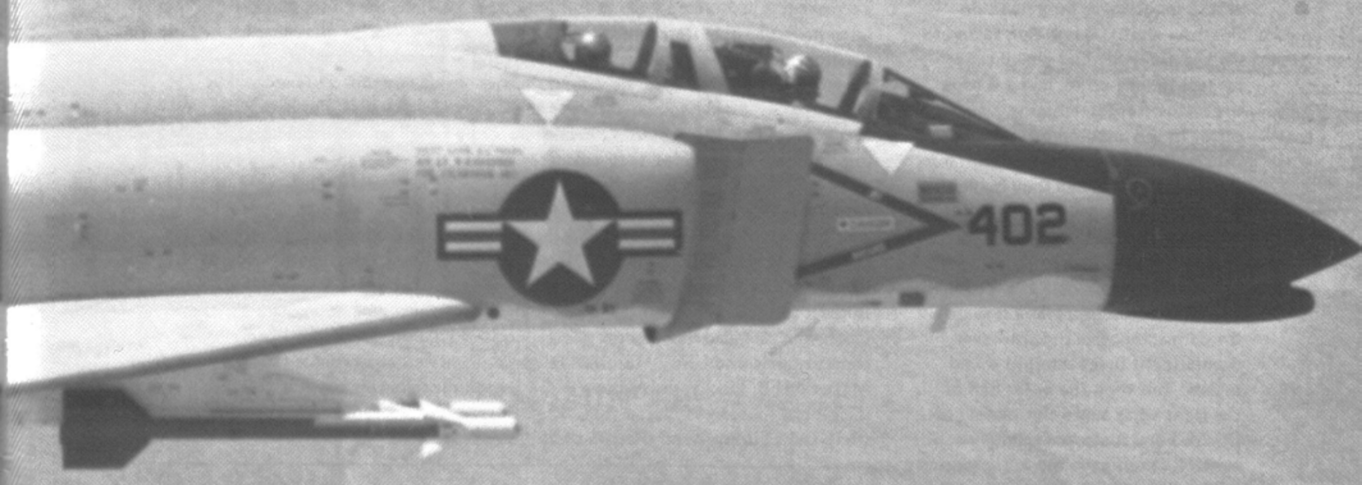

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Front Cover

On 17 June 1965, US Navy F-4Bs from VF-21 succeeded in shooting down the first MiGs to be officially credited to American pilots in the Vietnam War. Six Phantom IIs had launched from USS *Midway* (CVA-41) on a TARCAP (Combat Air Patrol over the Target Area) mission as part of a 14-aircraft strike package of A-4 Skyhawks and F-4Bs sent to bomb the Thanh Hoa bridge – a key strategic target for the duration of the *Rolling Thunder* campaign. The A-4 pilots dropped their bombs and turned south for home, whereupon the Navy jets were challenged by four MiG-17s. The two Phantom IIs best placed to intercept the Vietnamese fighters were 'Sundown 101' and '102' (BuNos 151488 and 152217), flown by VF-21's XO, Cdr Lou Page, with Lt John C Smith as his Radar Intercept Officer (RIO), and Lt Jack E D Batson and RIO Lt Cdr Robert Doremus, respectively. The pilot of 'Sundown 102' remembers;

'The first plane (Lou and J C) was to set up a head-on attack, having made a positive visual ID. Rob and I would manoeuvre for a head-on Sparrow shot. J C and Rob talked to each other regarding which radar targets to lock on to, and J C took the farther target, creating a slight offset to the head-on attack. This caused the MiGs to make a turn into the lead plane. When they banked, the very distinctive wingplan of the MiG-17 was visible.

'Lou fired at close to minimum range while shouting, "it's MiGs!" I saw his missile fire, guide towards the formation, and the warhead detonate. At first I thought it had missed, but then the outer half of the right wing came completely off the MiG and it started rolling out of control. I then gave my full attention to the steering information on my radar scope, and I fired at minimum range. The missile (AIM-7) fired from the rail on the right wing and swerved under the nose of the aeroplane. I lost sight of the missile, but Rob saw it guide to a direct hit' (Cover artwork by Iain Wyllie)

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EDITOR'S NOTE

To make this best-selling series as authoritative as possible, the Editor would be interested in hearing from any individual who may have relevant photographs, documentation or first-hand experiences relating to the world's combat aircraft, and the crews that flew them, in the various theatres of war. Any material used will be credited to its original source. Please write to Tony Holmes at 10 Prospect Road, Sevenoaks, Kent, TN13 3UA, Great Britain, or by e-mail at: tony.holmes@osprey-jets.freeserve.co.uk

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VF-114 'Aardvarks' was the first west coast-based fighter unit to deploy with the Phantom II aboard a Pacific Fleet carrier, the unit embarking on the USS *Kitty Hawk* (CVA-63) in September 1962. The squadron would subsequently complete six combat cruises to Vietnam aboard CVA-63, and down four VPAF aircraft. This all lay ahead for the unit when F4H-1 BuNo 148375 was photographed 'on the wing' over southern California in March 1962. Six months later, this aircraft became an F-4B as part of a Navy-wide redesignation programme (*via Aerospace Publishing*)

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PREFACE

There are few knowledgeable individuals who would dispute that the McDonnell Douglas F-4 Phantom II played an instrumental role in prosecuting the air war over North Vietnam. This rugged, versatile jet, originally designed as a long-ranged interceptor, served quite well as a bomber and reconnaissance platform, and flew as the frontline fighter for all three United States military services during the war.

During the late 1950s, the Phantom II, as well as its complement of air-to-air missiles (namely, the medium-range, radar-guided AIM-7D Sparrow and the short-range, infrared-guided AIM-9B Sidewinder) were believed to be the way of the future, detecting, tracking and killing non-manoeuvring targets at great distances before the targets realised that they were even being hunted. But, as the war in Vietnam soon showed, those beliefs were still a long way from fruition, and are only now today, in the 21st Century, becoming a reality. Even so, beyond visual range (BVR) engagements are still not the norm, as today's conflicts often take place in congested littorals.

While the air war over North Vietnam was predominantly a bombing campaign that was designed to bring the North Vietnamese to the bargaining table, MiG fighters of the Vietnamese People's Air Force (VPAF) were an ever-present threat to US strike aircraft. Although widely believed to be a rather inept cadre during the early years of the conflict, the VPAF pilots honed their skills and improved their tactics during the course of the war.

Between 1965 and 1970, VPAF MiGs claimed eight US Navy fighter aircraft, five of which were F-4 Phantom IIs. In return, Navy F-4 crews downed thirteen MiGs (seven MiG-17s and six MiG-21s) and one Communist Chinese MiG-17 (the Chinese in turn also claimed an F-4 destroyed). Even considering the kills of Navy F-8 Crusader crews (see *Osprey Combat Aircraft 7 - F-8 Crusader Units of the Vietnam War* for further details), the overall kill ratio was a dismal 2.42 to 1, which compared poorly with the ratios seen in Korea and World War 2.

Part of this deficiency could be blamed on the fact that the Phantom II was still an aircraft in its infancy, and its performance envelope had yet to be fully explored. The same was true of the new, and in many cases complex, missile systems used by the F-4 crews. But part of the blame could equally be placed on the short-sightedness of the US Navy in failing to properly train its aircrews in air combat tactics - the art of dogfighting that had been discarded by the intercept community in favour of the new air-to-air missiles.

As Capt Frank Ault, former Commanding Officer of USS *Coral Sea* (CVA-43), and the person responsible for the now famous 'Ault Report', commented in the early 1970s, 'During my Tonkin Gulf tour in *Coral Sea*, air combat kills rose to about eight per cent of US combat losses, from a 1966 figure of three per cent. By 1968, this figure had reached 23 per cent. The numbers were worse than they appeared because we were losing two people and a four-million-dollar aircraft with every Phantom II shot down, versus a million-dollar, single pilot MiG.

'We knew from Phantom II versus Crusader and Phantom II versus MiG hassles that fighting a heads-up fight with a heads-down system was a loser. Worse than that, neither Phantom II nor Crusader pilots had much air-to-air combat training because of doubts that it was needed, and because the Navy was not willing to accept the higher possibility of accidents demonstrated by earlier experience.

'The Phantom II's problems were exacerbated by the conversion to a free-fall, lanyard-actuated Sparrow from earlier rail-launched weapons, and failure to periodically verify weapon system functional integrity. Consequently, we encountered air combat situations where neither the pilot nor his aircraft had ever fired the weapon(s) involved.'

Capt Ault's comments tell it accurately, and paint the background against which the 'MiG killer' of the *Rolling Thunder* years emerged.

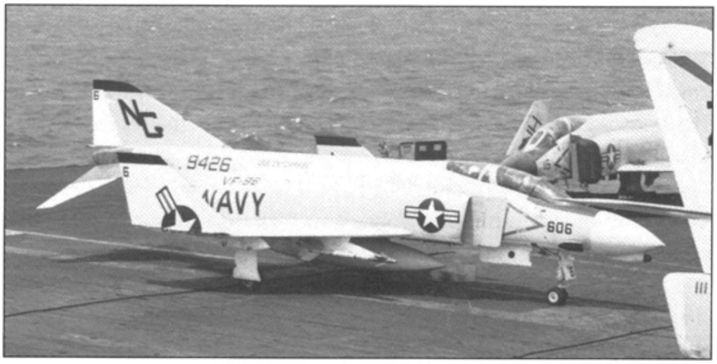
This book details the story of the US Navy's F-4 Phantom II 'MiG killers' during the first phase of the Vietnam air war, from 1965 to 1970. These men fought under considerable political and tactical restrictions, and yet prevailed in the toughest of all air battles – man-versus-man. To some extent, it can be said that these men were even more heroic and ingenious than those who flew during the second major air phase of the Vietnam air war, as the 'MiG killers' of 1965 to 1970, equipped with poorly functioning weapons and outdated tactics, were pitted against an ever-growing, and aggressive, VPAF MiG force. Yet they prevailed.

INCIDENT AT HAINAN

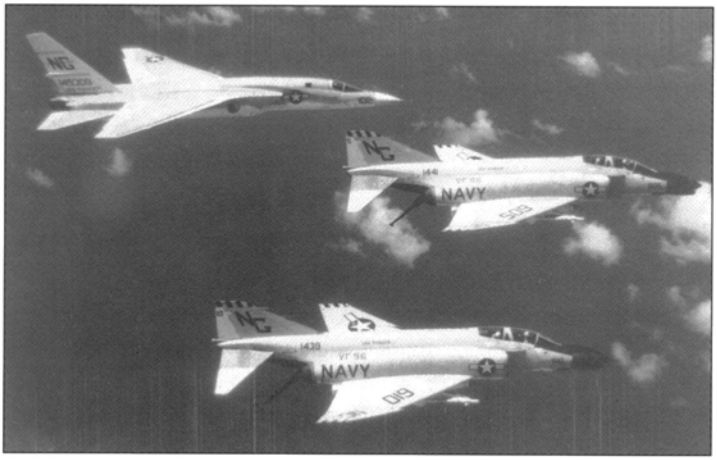
On 9 April 1965 the carrier USS *Ranger* (CVA-61) was operating as part of Task Force 77 on *Yankee Station* in the Tonkin Gulf. While Navy carriers had been involved in Operation *Rolling Thunder* for a mere three weeks, *Ranger's* Carrier Air Wing Nine (CVW-9) had already seen its share of action, having participated in *Blue Tree* missions (pre-strike reconnaissance flights), and also having flown top cover for the 7 February *Flaming Dart I* strikes against Vit Thu Lu and 11 February *Flaming Dart II* retaliatory strikes against the Chanh Hoa barracks in southern North Vietnam.

Although the Navy's first encounter with VPAF MiGs had taken place just six days earlier (four F-8Es from VF-211 tangled inconclusively with a quartet of MiG-17s from the 921st Fighter Regiment near the Dong Phong Thong bridge), crews had nevertheless briefed heavily on the possibility of an engagement in the months leading up to this first encounter. Also, given *Yankee Station's* proximity to Hainan Island, a Chinese possession just north of the 20th parallel, aircrews had been warned to keep a lookout for Chinese MiGs – particularly since the Chinese had 'claimed' a 30-mile 'no-fly' zone extending from its border.

At 0803 hrs on the morning of the 9th, two F-4B Phantom IIs from VF-96 launched from *Ranger* and headed north to perform a routine



VF-96 (along with sister-squadron VF-92) would complete more combat tours to Vietnam than any other F-4 Phantom II unit in the US Navy. This photograph was taken in late 1965, by which time the 'Fighting Falcons' were already participating in their second (of eight) cruises to Vietnam. 'Showtime 606' (BuNo 149426) is seen taxying forward towards the waist catapults on the *Enterprise* (*via Aerospace Publishing*)



In the weeks immediately prior to the Hainan clash, VF-96 (and VF-92) had been flying fighter escort for RA-5C Vigilantes tasked with performing *Blue Tree* reconnaissance missions over North Vietnam. Here, F-4Bs BuNos 151439 and 151441 formate with their charge (a Vigilante from RVAH-5) for the benefit of the camera following the successful prosecution of yet another recce flight (*US Navy, Cdr K W Stecker*)

NG
1403
VF-96
NAVY
NG
1438
VF 96
NAVY

VF-96's 1964-65 *WestPac* aboard the *Ranger* lasted a staggering nine months, during which time the vessel spent 103 days on the line generating combat sorties. This photograph, taken in January 1965, features three jets from the unit performing a tight formation break for the camera. The third F-4B in this shot is none other than BuNo 151403, which was lost in action on 9 April 1965 during the Hainan clash. This historic photograph was taken by squadron CO, Cdr William F Fraser, who was flying lead during the engagement with the Chinese MiG-17s. F-4B BuNo 151438 was also lost during 1965 when, on the night of 28 December, its crew was forced to eject when they failed in their attempts to trap aboard the *Enterprise* during bad weather following an armed recce over Laos. With their fuel exhausted, pilot Lt Dean Forsgren and RIO Lt(jg) Robert Jewell had little choice but to abandon the fighter – both men were quickly recovered by the ship's plane guard helicopter (*US Navy*)

BARCAP (Barrier Combat Air Patrol) at 35,000 ft, some 25 miles off the coast of North Vietnam near the port city of Hai Phong. These jets were crewed by Cdr William F Fraser (the squadron CO) and Lt(jg) Christopher Billingsley (RIO) and Lt Don Watkins and Lt(jg) Charles R Hayes (RIO). Both F-4Bs were armed with two AIM-7D Sparrow IIIs and two AIM-9B Sidewinders, and each carried a 600-US gallon centreline drop tank.

The third F-4B (BuNo 151425) that was due to participate in the BARCAP experienced an engine failure two-thirds of way through its catapult stroke and subsequently crashed into the Gulf. Its crew, Lt Cdr William E Greer and Lt(jg) Richard R Bruning (RIO), ejected and were swiftly recovered, leaving Lt(jg) Terry M Murphy and Ens Ronald J Fegan to launch (in BuNo 151403, call sign 'Showtime 602') in their place as replacement section leaders. Minutes later standby crew Lt Howard B Watkins Jr and Lt(jg) John T Mueller (RIO) departed CVA-61 to join Murphy and Fegan on BARCAP. The latter F-4s were equipped exclusively with Sparrow rounds.

There had been some delay in launching the standby jet, which was manned on the deck, but not in position to immediately take a catapult shot. Desperately trying to catch up with their section leaders as Murphy and Fegan sped north, Watkins and Mueller heard the pilot of 'Showtime 602' call 'Three in the con' (contrails).

A flight of three Chinese MiG-17s had been detected approaching the *Ranger*, and Murphy had been vectored in the direction of Hainan Island. He made the chilling call once the fighters had been visually acquired.

Still some way behind their section leaders, Watkins and Mueller were then jumped by a fourth MiG. The delayed 'cat shot' now meant that both Phantom II crews would have to fight it out alone, or at least until Fraser and Don Watkins arrived to lend a hand after being hastily called off their station to assist. At the same time that 'Howie' Watkins was bounced from behind by the single MiG, Murphy reported that he was being fired upon.

According to personal accounts, the US crews engaged the MiGs, firing two Sparrows (one went ballistic and the other suffered a motor ignition failure) and two Sidewinders (one was evaded by the target and the second failed to make contact) at close quarters. In the ensuing melee, the crews lost track of Murphy and Fegan, and only realised they were missing when the three surviving jets rendezvoused and headed for nearby A-3B tankers diverted from the morning's *Rolling Thunder* strike.

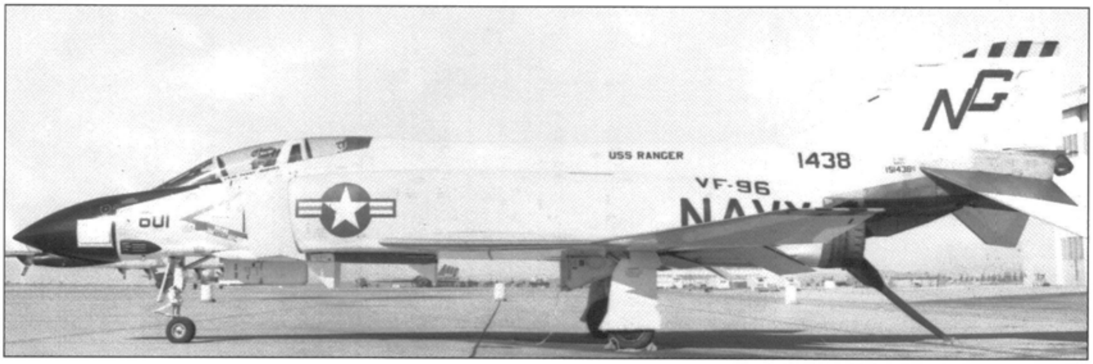
Despite repeated radio calls, 'Showtime 602' could not be raised, and Murphy and Fegan were posted missing in action. At least one of the F-4 crews had heard Murphy transmit 'Out of missiles, RTB' (Returning to Base) during the course of the engagement, and as they were leaving the area, Watkins and Mueller saw a silver MiG-17 explode and crash, prompting them to call 'Good shooting, who got him?'

At the same time, the ship-borne GCI (Ground Controlled Interception) controller in *Ranger's* CIC (Combat Information Center), which had noticed 'Showtime 602' turn away from Hainan, also spied a second blip behind it. Moments later, the Phantom II disappeared from the radar plot. The official squadron report stated that at 0905 hrs, Murphy and Fegan 'did not check in with the flight leader'. An air search was conducted over an area of 7500 square miles for over two hours, with no luck.

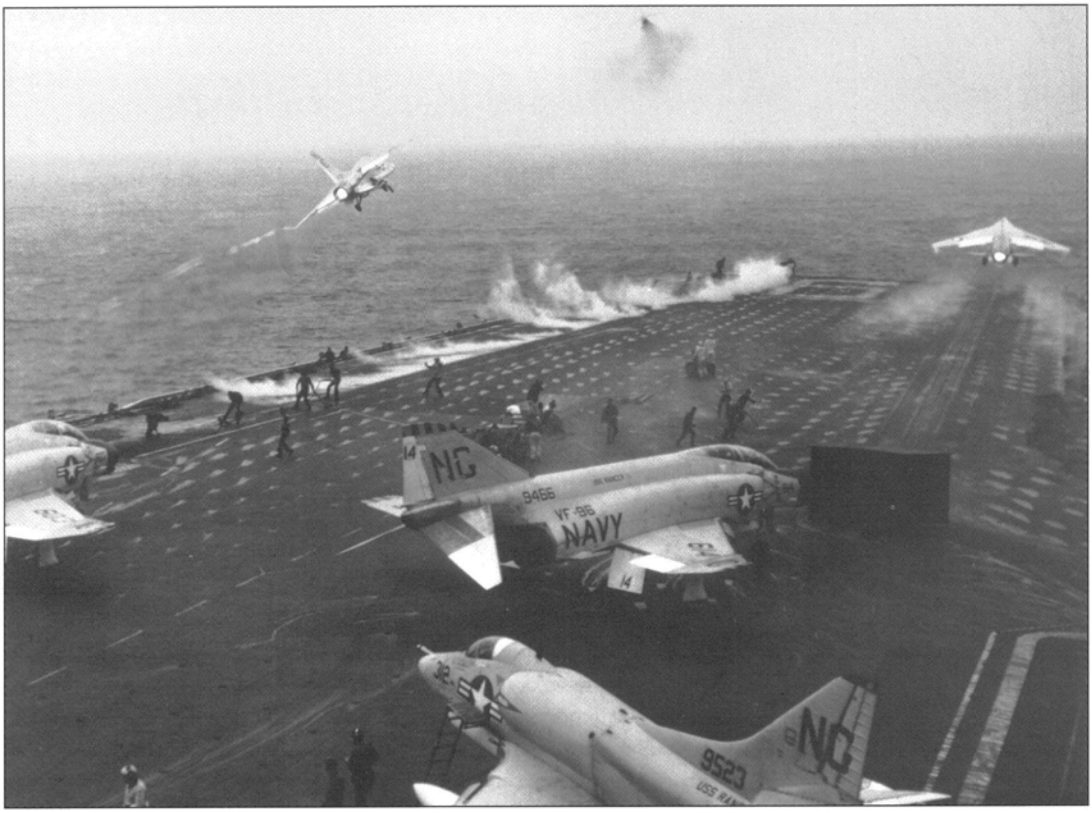
The official reports are less detailed as to the last moments of Murphy and Fegan's short lives, although they do provide insight into Fraser and Watkins' actions upon joining the fray. Moreover, they lend credibility to Murphy's victory, given that none of the remaining crews involved in the engagement scored a hit.

VF-96's reports show that 'Showtime 603' (Fraser) and '610' (Don Watkins) were on station at 40,000 and 35,000 ft respectively. At 0855 hrs, '603' acquired one of the MiGs in boresight at six miles as it passed from left to right. At five miles the pilot illuminated the MiG with the Westinghouse AN/APQ-72 radar fitted in his Phantom II, and the RIO quickly secured a missile lock, then switched to MAP (Multiple Aim Point) mode to obtain auto track. '603's' pilot banked the Phantom II 30 degrees to the right, establishing a lead on the MiG, then placed the steering dot in the ASE (Allowable Steering Error) circle. At three miles, Fraser fired an AIM-7, and although lock-on was maintained, the missile failed to track and went ballistic, travelling wide and below the MiG.

Still keeping the original lock, 'Showtime 603' 'switched to heat and tracked (the MiG) optically (35 miles lead) and received tone'. The Sidewinder was fired at a range of 1.5 miles and initially tracked the MiG, which was in a shallow left bank. The MiG then broke hard left and slightly nose down, causing the Sidewinder to lose track and miss by some 50 ft. Later, '603's' crew commented that 'this missile should have been



BuNo 151438 is seen in happier times at Edwards AFB in May 1964 during a base open house. Although the '01' aircraft is traditionally assigned to the CO of the squadron, this particular Phantom II bears the name *LTJG TERRY MURPHY* on its forward canopy rail – perhaps he had flown the jet from VF-96's NAS Miramar home to the air force's primary testing facility. In April of the following year Murphy and his RIO Ron Fegan were almost certainly responsible for the F-4's first aerial victory, and just minutes later became the first crew to be lost in action in the McDonnell fighter interceptor. Their mount during the Hainan clash was BuNo 151403 (*US Navy via R Besecker Collection via Norm Taylor*)



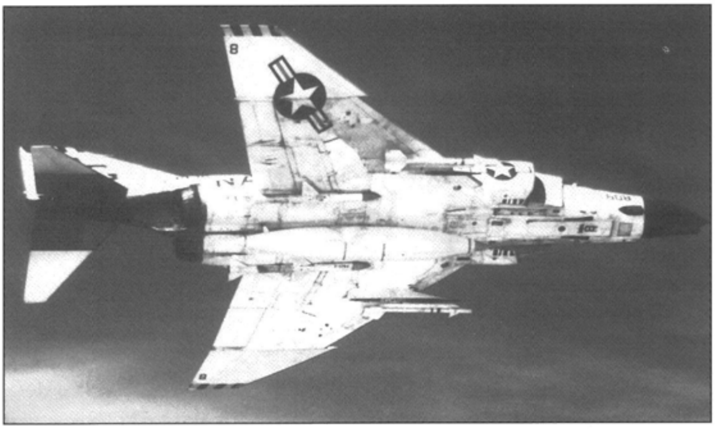
VF-96's first experience of operating in South-East Asia occurred almost two years prior to the Hainan incident when, between 2-5 May 1963, the *Ranger* conducted air operations in the South China Sea off Vietnam in response to the Laotian crisis. The first Phantom II-equipped unit to venture into these waters, VF-96 (and the rest of CVW-9) did not see action on this occasion, however. Looking forward from the island of CVA-61, two F-4Bs prepare to launch from the bow cats following the successful departure of a pair of F-8Cs from VF-91. Behind the Phantom IIs in the launch queue is an A-4C Skyhawk from VA-93 (*US Navy via Naval Aviation Museum*)

able to intercept the target, but the missile did not appear to be turning as sharply as it was capable of, even at that high altitude'.

'Showtime 603' readied for another shot at the MiG, now at 47,000 ft and manoeuvring. Lock-on was achieved at 12 miles, then lost, and re-acquired at seven miles. At 3.5 miles, the crew fired a second Sparrow at the MiG, which was now flying straight and level, but the missile's rocket motor failed to ignite and the round dropped harmlessly into the sea.

The crew of 'Showtime 610' experienced the same frustrations as they pursued their own MiG-17;

'Our first run commenced as soon as the MiGs were spotted visually in the contrails. We acquired them on radar about 45 degrees left, 18 miles,



Seen in typical BARCAP configuration, this VF-96 F-4B carries two AIM-7D Sparrow IIIs in the rear centreline launch troughs, two AIM-9Bs on its shoulder pylons and a 600-US gallon centreline drop tank. Two of the four F-4s involved in the Hainan incident were identically configured to this jet (*US Navy via Peter Davies*) and made a port turn to put them on a collision course. At this time the arm-safe switch was placed to "arm". The starboard missile armed since the port select light had blinked off. They (the MiGs) appeared to turn into us, and a forward quarter run developed. We switched to "10-mile" scale. In range occurred at eight miles and maximum blossoming at five miles, at which time we fired the Sparrow III missile on number seven fuselage station. The pilot felt a thud, but the missile was not observed, even after sharply banking the aircraft left and right. Apparently, the missile motor did not fire.'

'Showtime 610'made a second run at the MiG, the communist fighter being acquired at ten degrees left at a range of six miles, in a starboard turn. Pulling hard to starboard to match the MiG's turn, '610' fired at the MiG at 3.5 miles, but the missile dropped without the motor firing. Undaunted in their attempt, the crew drove hard on the MiG's seven o'clock position, and at 1.5 miles, and with good tone, triggered the starboard Sidewinder. As with the Sparrow, the AIM-9B failed to fire.

Switching to the port Sidewinder, the pilot fired into the MiGs now-ignited afterburner – the AIM-9B failed to track and missed wide. A final attempt was made with the starboard missile, but it again failed to fire.

The Chinese subsequently claimed that 'Showtime 602' had been destroyed by their Air Force, contending that the Phantom II crew had tried to turn with the MiG, bled off speed, and 'was caught in the MiG's gunsights'. Other reports suggest that the F-4 may have been downed by an errant AIM-7, which, given that similar incidents were not uncommon later in the air war, has not been completely ruled out.

The Hainan Island incident had provided both the first MiG kill of the war (although this was not officially acknowledged in order to avoid upsetting the Chinese) and almost certainly the first F-4 loss to a MiG. The type of MiG that downed Murphy and Fegan also remains a mystery, for certain theorists believe a MiG-19 or MiG-21 could have snuck up behind the fleeing Phantom II at high speed and hit it with a heat-seeking missile.

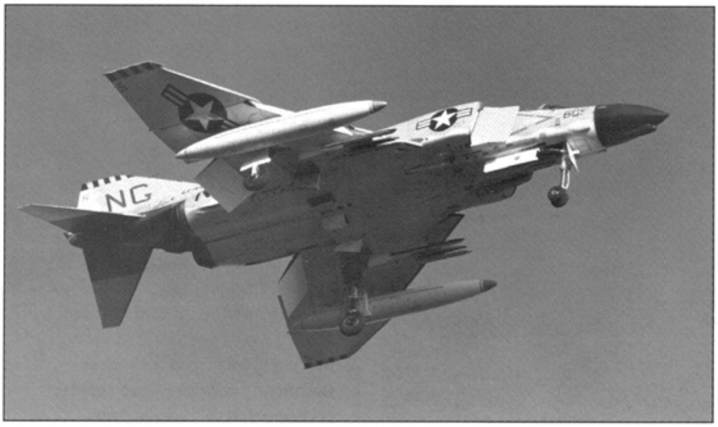
Although not publicised for years, the Hainan Island incident had a significant impact on the F-4 community, as it demonstrated the fundamental problem that would be encountered when attempting to fight a MiG on its own terms. Moreover, the engagement demonstrated the inherent unreliability of American air-to-air missiles – another problem that would continue to plague Navy and Air Force crews throughout the war.

As noted by the mission report prepared by the crew of 'Showtime 603', 'the performances of the missiles was most disappointing and frustrating. Three good runs were made that should have resulted in the missiles intercepting their targets. All indications available to the crew were that the weapons system should have been functioning perfectly'.

Hook retracted, VF-96's BuNo 150412 is seen on short finals to NAS Atsugi during the unit's 1964-65 *WestPac* on the *Ranger*. Situated on the outskirts of Tokyo, Atsugi, and its maintenance facilities, would play a vital role in supporting carrier air wings during their many months on the line in the South China Sea. This was particularly true during the early combat deployments, as VF-96 CO Cdr Bill Fraser remembers;

'McDonnell had not really learned yet how to properly seal the F-4 to prevent salt corrosion. Where there were dissimilar types of metals, like on the tail section, you got a good galvanic action. Where it got bad you could literally poke a pencil through it. We ended up having to send some of the F-4s to Atsugi to have replacement panels of aluminium made. I remember the hate and discontent when we turned those birds over to other squadrons on our return.'

Most units would leave one of their aircraft ashore at Atsugi to act as a spare in case of combat or operational attrition, and the facility also served as an arrival point for replacement airframes flown over from the US
(*via Aerospace Publishing*)



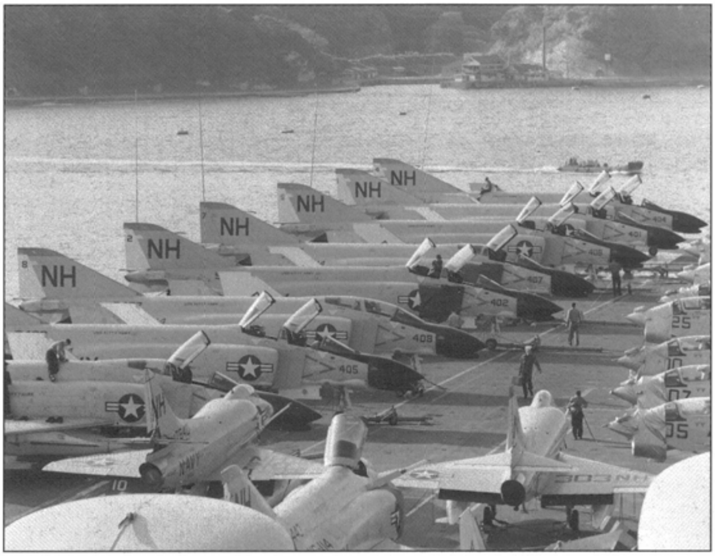
THE PLAYERS

USS *Kitty Hawk* steams off the coast of southern California at the start of its first *WestPac* to Vietnam in October 1965. Embarked are the nine squadrons of CVW-11, including F-4-equipped VF-114 and VF-213. This cruise would see the air wing suffer its greatest losses in combat, with no less than 20 aircraft being downed over enemy territory. Included in this number were no fewer than six Phantom IIs (*via Brad Elward*)

When the war in South-East Asia turned 'hot' in April 1965, and the Vietnamese People's Air Force started to oppose American air strikes on targets in the North, the US Navy was in the midst of transition in both aircraft carrier types and naval aircraft.

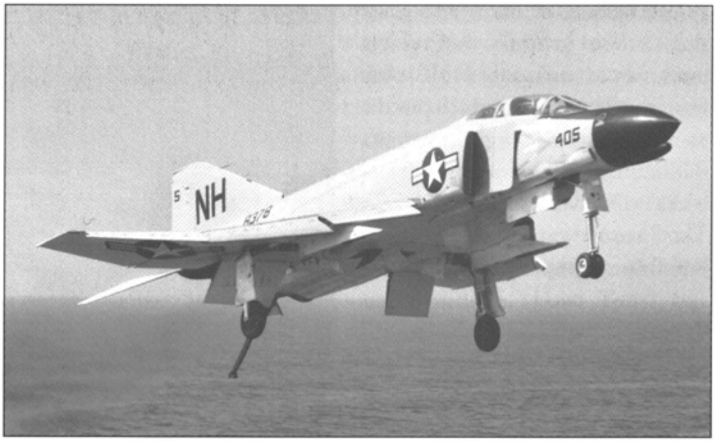
The so-called 'large-deck' carriers assigned to the Pacific Fleet at the time included the *Kitty Hawk*, *Ranger*, *Constellation* and the Navy's sole nuclear-powered carrier, the USS *Enterprise* (CVAN-65), as well as the smaller *Coral Sea* and *Midway*. Five Atlantic Fleet carriers also participated in combat operations, namely USS *Franklin D Roosevelt* (CVA-42), USS *Forrestal* (CVA-59), USS *Saratoga* (CVA-60), USS *Independence* (CVA-62) and USS *America* (CVA-66). These vessels displaced as much as 89,600 tons (CVAN-65), and could handle up to 90 aircraft.

Each of these carriers operated air wings that controlled two fighter (VF) squadrons, equipped with the new McDonnell F-4B Phantom II. Only three vessels – *Midway*, *Kitty Hawk* and *Coral Sea* – briefly operated F-4s and F-8 Crusaders alongside each other, and such a mix had been abandoned by 1966.



When VF-114 participated in its first *WestPac* with the F-4B in 1962-63, it was the sole Phantom II unit within CVW-11. As this photograph of CVA-63 at anchor in Japan clearly shows, the fighter duties on this deployment were shared with F-8D-equipped VF-111, whose jets are chained down over bow cat one (*via Aerospace Publishing*)

F-4 PHANTOM II



An early-production F4H-1 is waved off from its approach during VF-114's first carrier qualification period with the Phantom II aboard the *Coral Sea* in September 1961 (*via Aerospace Publishing*)

By 1964, the F-4B Phantom II was fast becoming the primary US Navy fleet fighter, replacing the ageing F-8 Crusader, which had been introduced in 1956.

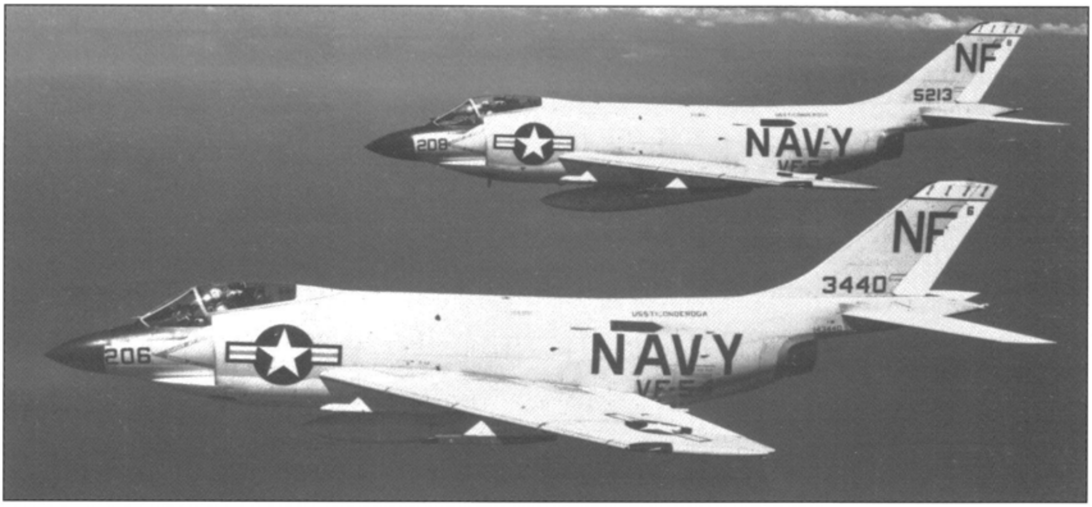
In the late 1950s, Navy fighter squadrons operated two fighter types – the F-8 for traditional close-in dogfighting and the F3H-1 Demon for missile interceptions. McDonnell's F-4 would eventually replace both aircraft.

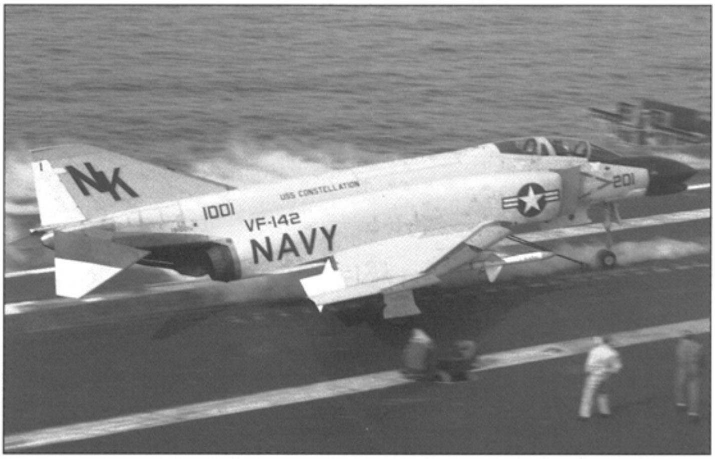
Designed as a fleet defence interceptor to stop long-ranged Soviet bombers, the F-4 was built around a complex radar and weapons system featuring the Raytheon AIM-7 Sparrow III semi-active radar-homing missile. The jet's radar (the Westinghouse AN/APQ-72) provided range-to-target and bearing information displayed in 'B-scope' format, and provided the guidance for the Sparrow III missile system, then designated the AAM-N-6.

The Sparrow essentially rode a 'beam' of electromagnetic energy emitted from the AN/APQ-72 radar and reflected back to the missile from the target. Introduced in 1958, the Sparrow possessed a maximum head-on range of 13 miles, and carried a 65-lb warhead. Far superior to comparable weapons of the time, the Sparrow nevertheless suffered from the need to keep the F-4 aimed at the target aircraft while the missile tracked. AIM-7D/E Sparrows were responsible for 27 kills during the course of the war, and nine of the seventeen Navy F-4 kills during the 1965-70 time frame.

The Sparrow proved not nearly as effective as intended, however, primarily because of the operational restrictions placed on its use by the politically-imposed Rules of Engagement (ROEs). These required visual identification of the target before a missile could be launched, thus cancelling out the weapon's ability to knock down targets beyond visual range.

As tensions grew in South-East Asia, the US Navy was moving from McDonnell's F-3B Demon interceptor to its replacement, the F-4 Phantom II. Demon pilots were seldom involved in dogfighting or 'hassling', as pilots dubbed ACM, and this showed as they transitioned to the more manoeuvrable Phantom II and struggled to combat the infinitely more agile MiG-17 (*US Navy via Naval Aviation Museum*)





The first US Navy Phantom II units to see real action in the Vietnam conflict were VF-142 and VF-143, embarked on the *Constellation* for CVW-14's 1964-65 *WestPac*. Both squadrons participated in Operation *Pierce Arrow*, on 5 August 1964, which saw retaliatory strikes on North Vietnamese PT boat bases following attacks on US Navy destroyers in the Gulf of Tonkin. While A-4s and A-1s bombed the targets, Phantom II crews flew TARCAP, guarding the strike aircraft en route to, and over, their targets. This F-4B is seen launching from 'Connie's' waist cat three, toting a live Sparrow round on its starboard shoulder pylon (*via Aerospace Publishing*)

And because of the MiG's small size, it was generally not visible until just a mile-and-a-half away from the Phantom II, which put the communist jet within the Sparrow's minimum launch range, and the F-4 within the MiG's cannon range. The Sparrow was also susceptible to interference from 'ground clutter', and faired poorly against targets flying at altitudes below the launching Phantom II.

Complementing the Sparrow was the AIM-9B (AAM-N-7) short-range, infrared-guided Sidewinder, which had already made its combat debut in the 1958 engagements between Taiwanese Air Force F-86Fs and Communist Chinese MiG-15s and MiG-17s over the Straits of Taiwan. The missile was credited with four kills during these large-scale clashes.

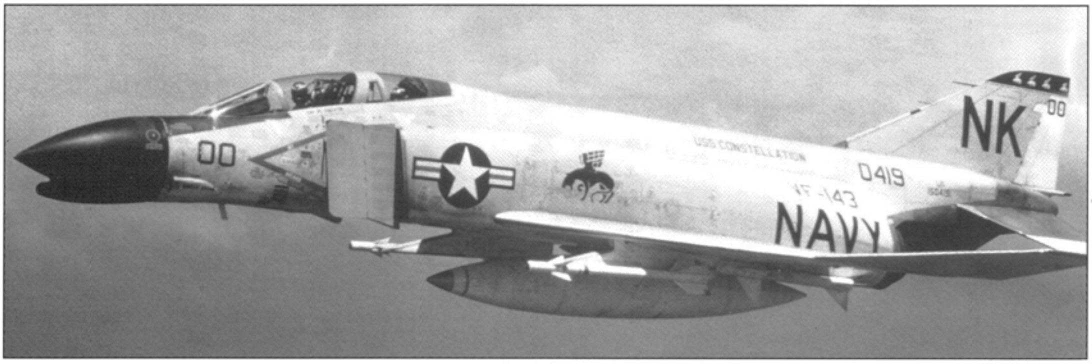
The Sidewinder was a creation of Bill McLean at Naval Ordnance Test Station China Lake, and dated back to the early 1950s. The Sidewinder was then a rear-aspect only missile that was most effective when launched within a 30-degree cone from a mile to a mile-and-a half back, where the missile's seeker head could home in on the enemy aircraft's hot exhaust.

As with the Sparrow, the Sidewinder was designed for intercepting non-manoeuvring bombers rather than nimble communist fighters. Experiences over the skies of North Vietnam soon proved that the AIM-9's envelope changed with the amount of g-forces placed on it by the host aircraft, which meant that it was not as effective in a 'rough and tumble' dogfight. Moreover, it could be defeated by 'getting low and turning sharply'.

The AIM-9B/F-4B combination had claimed just two MiGs for the Navy by the time the missile was replaced by the greatly improved AIM-9D in 1967. The new variant featured improved seeker coolant (high-pressure nitrogen), a new engine, longer range and a sleeker profile that caused less drag.

Of all the Sidewinder variants to see service in Vietnam, the AIM-9D (Sidewinder 1C) had the highest hit ratio. In 1968, it gave way to the AIM-9G, which touted one major improvement – the Sidewinder

AIM-9Bs on the shoulder pylons, AIM-7Ds in the aft missile troughs and a 600-US gal 'fixture' fuel tank on the centreline, this F-4B from VF-143 was photographed on a routine BARCAP mission off the 'Connie' during CVA-64's 1963-64 *WestPac* (*via Aerospace Publishing*)



Expanded Acquisition Mode (SEAM). SEAM slaved the seeker head to the F-4's radar, allowing the missile's seeker to be directed to the target. The seeker's azimuth was also expanded to 25 degrees in a circular scan. Provisions were also included for a visual target acquisition system (VTAS) helmet-mounted sight, which was trialled during the conflict and adopted in the mid-1970s.

Yet even with its armada of advanced and continually updated missiles, the Phantom II was lacking in one critical respect – it carried no internal gun. Although crews tried to remedy this serious oversight by adding a centreline gun pod (the SUU-23, housing the M61 Vulcan 20 mm six-barrelled Gatling gun fitted in the self-powered GAU-4 unit), it proved unworkable and was abandoned. With the pod fitted, the ubiquitous 'fixture' centreline drop tank had to be abandoned, resulting in two smaller tanks taking up vital space on the outer wing pylons. And the overall unreliability of the gun pod was further exacerbated by the shock of deck launches and recoveries. Despite these problems, a similar system enjoyed some success, and wider employment, with the USAF and Marines.

F-4 veteran and former Topgun instructor John Nash explained to the authors that the failure to include an internal gun was 'a tragic mistake';

'The F-4 needed an internal gun. The USAF had the better F-4 in the E-model (which had an internal gun). The Navy bought the Mk 4 (GAU-4) gun pod, which was "worthless", and that is an understatement. The NAVAIR civilians forbade us to go to Nellis and get 40 USAF SUU-16 gun pods for free when I was in VF-121/Topgun.

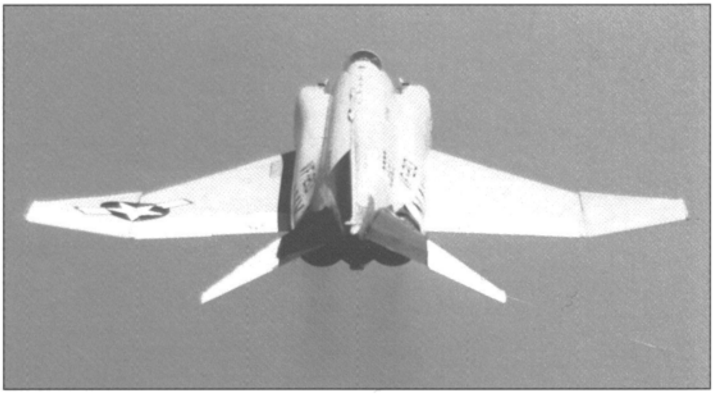
'Having an internal gun would have given the aircrews one more kill option. But as important as that, it would have changed the enemy's tactics. A gun would have added a significant threat that would have had to have been defended against by the MiGs. As it was, in an air-to-air engagement, a US Navy F-4 at 500 ft behind a bogie was *totally* ineffective without a gun.'

Although configurations were often mission-driven, F-4Bs could launch with up to four AIM-7 and four AIM-9 missiles and a 600-US gallon (2270 l) centreline tank. Odd configurations, such as six Sparrows, were sometimes carried, as were 370-US gallon (1400 l) wing-mounted tanks. F-4s flying BARrier Combat Air Patrols (BARCAP) were often configured with three AIM-9s, two AIM-7s and a centreline tank, whilst Phantom IIs flying MiGCAP (hunting for MiGs) typically boasted four AIM-9s and four AIM-7s, with between one and three external tanks.

The F-4B relied on two 17,000-lb (75.65-kN) maximum afterburner rated General Electric J79-GE-8 turbojet engines to power it off the carrier deck, with the assistance of the catapult. Although basically a good engine, the J79's primary drawback was that it left a long, black smoke trail when not operating in afterburner. This meant that Phantom IIs could be seen from many miles away, sometimes as far as 25 miles. 'Smoking engines get you shot, or shot at', noted John Nash.

MiG pilots used this deficiency to their advantage on many occasions during the *Rolling Thunder* campaign, conducting sneak attacks on F-4 formations. The problem was finally rectified in later models of the F-4J (from Block 37 onwards), and retrofitted into early Js and F-4Bs. However, some squadrons soldiered on with 'smoking' Phantom IIs until war's end, as John Nash explains;

'We had an "additive tank" that could inject something into the engine that was supposed to stop the smoking. However, I never saw any of the "stuff", and no one was concerned enough to get the programme going! Min-burner stopped the smoke trails, but burned gas faster – not the ideal remedy, but when no one cares enough to fix the problem, that's the only solution.'



With only a hint of the telltale smoke trails emanating from its J79 engines, a VF-213 F-4B powers away from the *Kitty Hawk* at the start of yet another combat mission in March 1968 (*via Robert F Dorr*)

Crews were wise to this problem, and devised several of their own ingenious 'fix-alls', including flying in minimum afterburner, then quickly changing altitude, and flying with one engine in idle and the second in minimum burner. Capt Jim Ruliffson, a former F-4 pilot and commanding officer of Topgun, also commented on these tactics;

'We trained in the States to go min-burner, which eliminated the smoke completely, when setting up head-on engagements. Over North Vietnam, though, we rarely had the "luxury" of knowing there was a bogie nearby, let alone in a position for a classic head-on pass, so nobody went min-burner to eliminate smoke trails.'

Flown by a crew of two (a pilot and Radar Intercept Officer, or RIO), the Phantom II was one of the first Navy fighters to be dual manned. Unlike the USAF, which at that time placed junior pilots in the flight control-equipped back seats of its Phantom IIs (these individuals were eventually designated Weapons Systems Operators, or WSOs, later in the war), the Navy used Naval Flight Officers (NFOs) who had been specially trained in navigation and radar operation. These men were NFOs by choice, rather than being junior pilots waiting their turn to move into the front seat. John Nash again;

'The RIO in the Phantom was totally indispensable. First, the aircraft was designed so it could not be fully employed in combat without a RIO. Second, a pilot would be downright stupid to get into a fight with more than one aircraft and not jump at the chance to use those extra eyeballs to stay alive.'

As the Phantom II was meant to be a successor for the F-100, F-104 and F3H-1 in the missile interception role, most of the crew training for the F-4 concentrated on the employment of these long-range weapons. While performing the intercept mission, RIOs spent the majority of their time 'head-down', studying their radar and working the AIM-7 system.

However, during close-in fights, where the Sparrow was essentially useless, RIOs best served the crew by watching for MiGs and surface-to-air missiles (SAMs). In fact, once the fight went 'visual', the RIO had the responsibility for all threats from the cockpit aft, while the pilot maintained the watch on the front section. As the conflict progressed, most MiG sightings were called by RIOs.

When the war began, the Navy's Phantom II squadrons were exclusively equipped with B-models, the first of which had joined the fleet with east coast-based VF-74 in July 1961 – VF-114 was the first deployable Pacific Fleet squadron, going to sea in September 1962.

The F-4B was the first definitive fleet defence model of the Phantom II, and the jet made its combat debut with VF-142 and VF-143 (from the *Constellation*) during the initial *Pierce Arrow* strikes of August 1964. Four years later, the F-4J joined the fray with VF-33 and VF-103 aboard the *America*, which was an Atlantic Fleet carrier that he been pressed into duty in Vietnam because of the escalation in hostilities. J-models (from VF-33 and VF-142) would claim MiGs in 1968 and 1970 respectively.

The F-4J offered a much improved AN/APG-59 radar and AWG-10 pulse-Doppler fire-control system (capable of detecting and tracking low and high altitude targets), as well as some aspects of the AN/ASW-25A datalink landing system that had been briefly ushered into fleet service by the rare F-4G when VF-213 embarked aboard the *Kitty Hawk* for a combat cruise in 1965-66.

The F-4J also featured uprated, and smokeless, J79-GE-10 engines, each offering 17,900-lb (80 kN) thrust in maximum afterburner. The improved Phantom II still lacked the internal gun requested by Navy aircrews, however.

The F-4B/J officially achieved a 2.8-to-1 kill ratio against VPAF MiGs during the 1965-70 time frame, claiming 14 MiGs (most historians now credit the jet with 16 kills, although the two An-2s downed during this period are not included in the ratio) to the F-8's 18 kills. Moreover, the Navy kill ratio as a whole – a disappointing 2.8-to-1 – was only slightly better than the 2.02-to-1 achieved by US Air Force fighter crews.

As explained later in the chapter on Topgun, the poor kill ratio was the result of inadequate training and a lack of appreciation by F-4 crews of the boundaries of the Phantom II's performance envelope. Many of the crews, and their aircraft for that matter, had never fired a live missile in training. Similarly problematic was the lack of ACM training resulting from the overconfidence placed in the effectiveness of new and developing missile systems.

During the late 1950s it was presumed that long-range air-to-air missiles such as the Sparrow, in conjunction with sophisticated airborne radar, would make dogfighting, and fighting with guns, a thing of the past. Indeed, this was the prevalent view in the F3H Demon community, and the mind-set had changed very little within Navy Phantom II squadrons by the early 1960s.

It was this mentality that the F-4B crews took with them to Vietnam, and which the founders of the Navy's Fighter Weapons School in 1968 sought to change, as the Americans faced the smaller, agile cannon-armed MiGs of the VPAF.

US TACTICS

US Navy fighters used a two-aeroplane basic fighting unit known as a section and employed an air-to-air formation known as 'loose deuce', which placed two aircraft flying abeam of each other with a separation distance of about one mile. From this position both crews could cover the other's rear quarter, or 'six o'clock', and provide mutual support.

The principal of loose deuce called for one aircraft (the 'engaged' fighter) to attack while the wingman (called the 'free' fighter) would manoeuvre with the engaged fighter, but far enough back to keep an eye out for other bandits or threats in the area. As the engaged fighter drove the bandit into a predictable flight pattern, the free fighter would call the shot.

This formation also gave Navy crews greater flexibility, as either aircraft could assume the engaged or free role. Moreover, both aeroplanes could operate at full power without fear of colliding with the other.

Loose deuce represented a departure from the standard intercept formation that saw the two Phantom IIs fly in a radar trail formation, separated by approximately three miles. The lead aircraft, known as the 'eyeball', would essentially serve as the spotter, calling the contact to the trailing Phantom II, which would then take a shot with a Sparrow. This separation preserved the requisite minimum distances needed for a successful AIM-7 launch, but proved unworkable in a close-in dogfight scenario within the Sparrow's parameters.

At the heart of the loose deuce formation was the ability to provide mutual support, both offensively and defensively. Mutual support, from a tactical perspective, is obtained when each aircraft can readily clear his counterpart's rear-aspect of aerial threats. And, while the military lead of the section never changes (always the senior aviator), the tactical lead is held by the aircraft with the best tactical position to see, evaluate and direct the flight.

The man with the initial contact (radar or visual) *has the lead* (be he the wingman or RIO), and calls a 'turn' on UHF, followed by a description of the bogie position and composition. In any event, the tactical lead must maintain sight of his wingman.

The loose deuce formation, which presented a variation of the famous 'Thatch Weave' developed during World War 2, was vastly different to the rigid 'fluid four' formation flown by USAF pilots. Fluid four was based on a four-aircraft flight split into two elements of two aeroplanes. In a dogfight, the two element leads, numbers 1 and 3, would engage the bandit in a similar fashion to the loose deuce, with the exception being that the two wingmen, numbers 2 and 4, served solely to protect their element leaders, numbers 1 and 3.

The wingmen flew as a 'welded wing' or 'fighting wing', staying within 1500 to 2000 ft behind their leader, and offset about 45 degrees. This formation worked fine when the aeroplanes were slower and propeller-driven, as in World War 2, but it was unworkable with the fast-moving jets of the 1960s. Welded wing pilots found they were so intent on staying in formation, and keeping from hitting their element leader, that they simply did not have an opportunity to look for other bandits in the area.

Fluid four flights also suffered from a 'single shooter' policy that meant that only the flight leader

A 'markingless' Phantom II from VF-21, off the *Midway*, drops cluster bomb units on suspected Viet Cong (VC) positions in seemingly featureless jungle in South Vietnam on 24 October 1965. At relatively low level the effect of these weapons would create a carpet of destruction across a wide area. Unfortunately, the chances of there being any VC in the vicinity by the time the bombing actually took place was slim. This photograph was taken by an RF-8A from VFP-63 Det A, the dedicated 'photo-bird' taking post-strike images for the mission debrief (*via Aerospace Publishing*)

could take a shot – the remaining fighters were along to protect the leader as he went after the MiGs. Naturally, this policy drastically reduced the offensive capabilities of the formation since only one of the four aeroplanes could shoot.

Jim Ruliffson remembers one situation where a USAF flight lead had expended all his missiles in pursuit of a MiG. When one of his wingmen called out that he had the MiG in his sights, and asked for permission to fire, the flight leader denied his request and ordered the flight to return to base!

Although designed as an interceptor, the Phantom II served in many roles, and was the first true multi-role/multi-mission aircraft. While the F-4B did not initially have an air-to-ground capability, it soon began flying flak suppression and strike missions once the US involvement in the conflict escalated. But the mainstay of the Phantom II missions were the TARCAP, BARCAP and escort missions, and later MiGCAP.

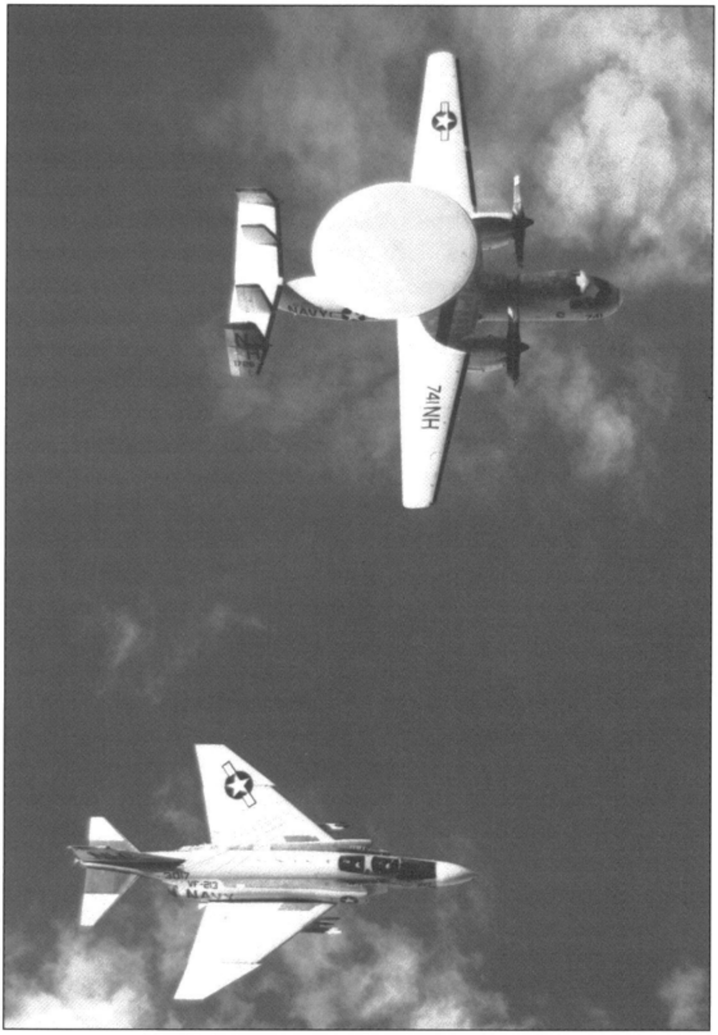
Most air wings alternated their fighter squadrons, either weekly or during line periods, between the strike/flak suppression and CAP/escort missions. This added flexibility reduced rearmament problems, and also created an equality in opportunity for crews to see MiGs. Fighter sweeps (air superiority) were not initially part of the Navy mission over South-East Asia.

The BARCAP and TARCAP missions were meant to provide early warning of attacking MiGs, and to serve as a buffer against the MiGs reaching the strike aircraft. BARCAP was usually flown by two F-4s (a section) flying in combat spread at 10,000 to 20,000 ft, and under the control of the *PIRAZ* (Positive Identification Radar Advisory Zone) destroyer.

If directed to investigate a contact, the Phantom IIs were to assume a two-to-three-mile radar trail formation where the Sparrow could be utilised if needed – TARCAP aircraft also flew in sections using a modified combat spread. Normal procedure called for the TARCAP to accelerate ahead of the main strike group and take up station in the area deemed most likely to be threatened by MiGs. Air speeds were typically around 400 knots.

MiGCAP was essentially a fighter sweep mission authorised from 1967 onwards in response to increased MiG activity. US aircraft were prohibited from attacking the

As the conflict continued, the relationship developed between the Phantom II and the drastically improved E-2A Hawkeye blossomed. Most air early warning squadrons had commenced operations with TF 77 flying the antiquated E-1B Tracer. However, by the time this photograph was taken (by an RA-5C from RVAH-11) in January 1968, virtually all the medium and large-deck carriers had traded up to the new E-2. This particular Hawkeye was assigned to VAW-114, which was in the process of conducting its second *WestPac* with the E-2 aboard the *Kitty Hawk* when 'snapped' by the 'Viggie'. The AEW aircraft is being escorted by VF-213 F-4B BuNo 153017 (*via Robert F Dorr*)



MiGs directly, and were not authorised to strike VPAF bases until April 1967. Even then, the northernmost bases, including Phuc Yen, near Hanoi, were off limits. Trolling for MiGs was not an authorised mission, although some air wing commanders sought ingenious ways to 'set up' encounters where MiG engagements could occur. Capt Ault remembers during his time aboard the *Coral Sea* in 1966-67;

'I spent a lot of time with my CAG and the F-4 squadron COs figuring out ways to get into fights with MiGs. For example, one stratagem was double cycling a section of F-4s and "hiding" them in a valley north of Hai Phong in the hope of "jumping" a MiG following an exiting strike group. Although a target never showed up, planning for an engagement included a thorough assessment of our weapons systems, and revealed both strengths and weaknesses.'

MiGCAP forces used their own operating frequency, rather than that employed by the strikers, and were controlled by a surface ship such as *Red Crown* or *PIRAZ*.

AIR OPERATIONS OVER NORTH VIETNAM

When the air war began in March 1965, there was some confusion between the Navy and Air Force as to which service would control what sector. Although a plan was conceived that divided each day into three-hour time slots, with control thereof alternating between the services, this soon proved unworkable, and a system was devised in November 1965 whereby sections of North Vietnam were divided according to six geographic regions called Route Packages. Responsibility for each 'Pak' was assigned on a rotating week-to-week basis. This, too, proved unworkable.

Beginning in April 1966, responsibility for each Pak was permanently assigned. The Navy was responsible for Packages II, III, IV and VIA, while the Air Force operated in Packages I, V and VIB. Within Pak VIA was the major port of Hai Phong and the MiG bases at Cat Bi and Gia Lam. Pak VIB contained the North Vietnamese capitol of Hanoi, as well as the major MiG bases at Kep, Hoa Lac and Phuc Yen.

The infamous Thanh Hoa Bridge, which was the focus of numerous missions before it was finally destroyed in 1972, was located in Pak IV, as was the MiG base at Quan Lang. Pak VIA and B were regarded as the most dangerous of the Route Packages.

Task Force 77 (TF 77) carriers of the Seventh Fleet operated from two stations, namely *Yankee Station* in the north and *Dixie Station* in the south. *Dixie Station* was established in June 1965 at the request of Gen William C Westmoreland (US field commander in South Vietnam), who was impressed with the level of expertise demonstrated by naval air crews.

Located approximately 100 miles south-east of Cam Ranh Bay at 11 N, 110 E, *Dixie Station* served as the starting point for a carrier on deployment to Vietnam, and aircrews would often spend a week operating from here – where MiGs and SAMs presented no threat – so as to get reacquainted with air operations, and refine tactics, before heading north. The station was eliminated in August 1966 after being operational for 15 months, carriers instead being sent directly north to *Yankee Station* upon their arrival in-theatre.

Yankee Station began at a location just east of the DMZ, then slowly moved north as the war ground on, eventually reaching a point just 70 miles east of Hai Phong. From *Yankee Station* Navy aircraft launched missions against all Route Paks within their command.

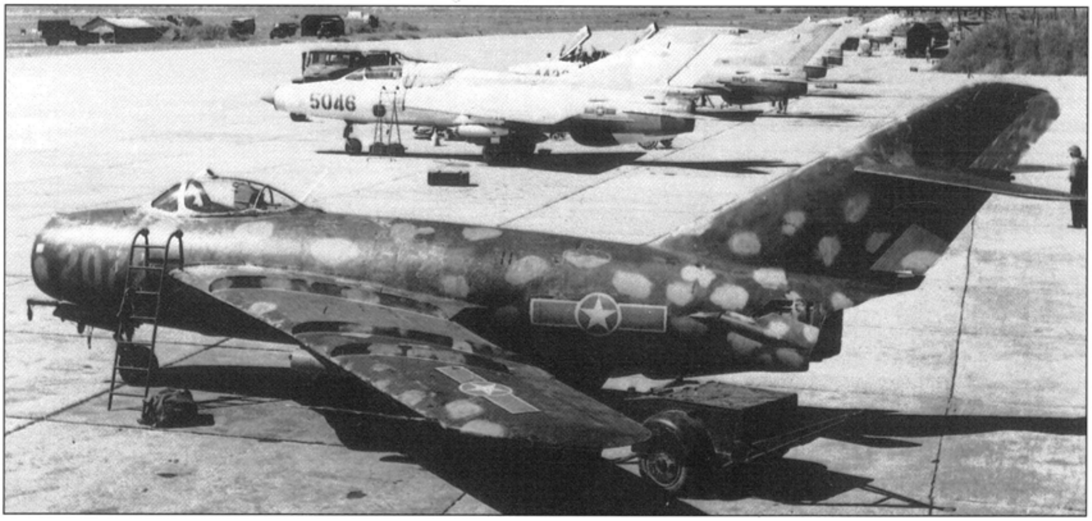
Generally, three carriers were stationed 'on the line' at *Yankee Station*, although a fourth was later added. Each carrier operated 12-hour operational shifts from noon to midnight and then midnight to noon, with a third added during the day. Line periods ran in ten-day increments within each operational segment. Whilst three carriers were on station, a fourth vessel would be in port in either Subic Bay or Japan.

Carriers conducted 'cyclic ops' when on station, strikes being 'cycled' every 90 minutes (eight per twelve-hour period) against smaller, yet lucrative, logistical targets in Paks II, III and IV. Alpha strikes – the all-air wing assaults which became prevalent during the later years of the war – were directed primarily against larger strategic targets (Petrol, Oil, Lubricants (POL) stored, power stations and MiG bases) in Paks IV and VIA.

The proximity of the *Yankee Station* carriers from the shore – the distance usually varied between 70 and 100 miles – often drastically reduced North Vietnamese warning time in comparison with Air Force strikes launched from Thailand. Later in the war, this would lead to fewer MiG-21 attacks against Navy aircraft, as the VPAF lacked sufficient time to set up 'hit and run' attacks using their elaborate Ground Controlled Intercept (GCI) network. This partially explains why Navy F-4 crews saw more MiG-17s than their Air Force counterparts.

Supporting each of the carriers were two to four destroyer screens to protect against possible submarines or attacking aircraft. Beginning in April 1965, the Navy also established two permanent radar pickets in the northern Gulf of Tonkin between TF-77 and North Vietnam. In July 1966, Seventh Fleet began operating *a PIRAZ* ship, tactically called *Red Crown*, in order to locate and track all aeroplanes over eastern North Vietnam and the Gulf of Tonkin, vector naval aircraft and keep a look out for approaching MiGs. During the war, ship-based SAMs were responsible for seven MiG kills. *Red Crown* controllers were widely respected by Air Force and Navy flyers alike, especially from 1970 onwards.

Interestingly, there were four very different air wars fought over South-East Asia. In South Vietnam, the air efforts provided ground support for



Camouflaged in a 'snake' scheme of dark green and earth, this MiG-17F is seen parked on the flightline at Noi Bai alongside MiG-21s in 1972. The mainstay of the VPAF in the early years of the Vietnam War, the MiG-17 'Fresco' (built under-licence in China as the J-5) was a subsonic fighter derived from the MiG-15, featuring a 45-degree swept-back wing. Although it carried no missiles until late in the conflict, the 'Fresco' was heavily armed with two Nudelmann-Rikhter (NR-23) 23 mm and one Nudelmann-Surana (NS-37) 37 mm cannon, the former having the greater range (up to 5000 ft). While the 'Fresco' had a phenomenal rate of turn, especially at slow speeds (below 400 knots), it was limited to high subsonic speeds, despite its afterburning engine, and possessed a roll-rate of only 136 degrees. So superior was the MiG-17's turn rate that VF-21's combat manual stated specifically, 'The basic philosophy currently taught to all jet aircrews concerning the MiG-15 and MiG-17 fighters is don't, repeat, DON'T turn with them!' Both of these factors would later become important to Topgun instructors as they trained students (and fleet pilots) in how to combat the MiG-17 using the Phantom II's strong points (*via István Toperczer*)

In late 1965 the VPAF began operating the Soviet-built delta-wing MiG-21 'Fishbed', which was about half the size and a quarter of the weight of its Phantom II counterpart. Representing the very latest in Soviet fighter design, the MiG-21, with its high dash speed and ability to turn inside the F-4 in horizontal flight, greatly improved the air defence capabilities of the VPAF. MiG-21s flew in the point defence role and later, working under the close supervision of ground controllers, mastered the 'zoom-and-shoot' attack (*via István Toperczer*)

US ground forces and ARVN troops fighting the Viet Cong and NVA regulars. Interdiction operations were flown in Laos against re-supply efforts along the Ho Chi Minh Trail, and Cambodia saw a combination of interdiction and ground support missions. In North Vietnam, however, the air war took the form of a series of strategic bombing campaigns, and it was in this sector that *Rolling Thunder*, and later *Linebacker I* and *II* operations, were conducted.

All US Navy MiG kills (aside from aircraft shot down by SAMs fired from ships) were claimed over North Vietnam by aircraft operating from carriers on *Yankee Station.*

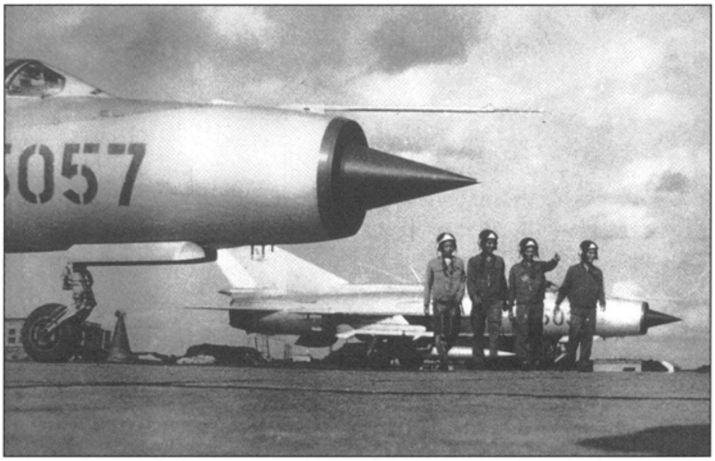
Air operations over North Vietnam occurred in two stages – Operation *Rolling Thunder*, which ran from 3 March 1965 to 31 October 1968, and Operations *Linebacker I* and *II*, during 1972. *Rolling Thunder* was intended to be a slowly escalating strategic bombing campaign aimed at convincing the North Vietnamese to come to the negotiating table.

In *Rolling Thunder*, targets were highly regulated by Washington, and pilots subject to overly restrictive Rules of Engagements that prohibited them from attacking certain 'sensitive' targets in and around Hanoi and Hai Phong and, until mid-1967, most MiG bases. The *Linebacker* raids, on the other hand, had few restrictions, and proved quite effective.

The Navy F-4/MiG engagements during the *Linebacker* raids are covered in the companion volume to this publication, *Osprey Combat Aircraft 30 - US Navy F-4 Phantom II MiG Killers of the Vietnam War, Vol II, 1971-73.*

Other air operations conducted during the war included *Blue Tree* surveillance flights over North Vietnam, and *Barrel Roll*, *Steel Tiger* and *Tiger Hound* interdiction operations over Laos. *Proud Deep Alpha*, directed against North Vietnamese troops massing along the DMZ, lasted for five days in 1971, and Operation *Freedom Train* represented the initial US air response to the 1972 North Vietnamese invasion (the Easter Offensive) of South Vietnam.

Pilots stroll along the flightline past missile-toting MiG-21s. The 'Fishbed' was typically armed with a 60-round NR-30 30 mm cannon (enough for five continuous seconds of firing) and two AA-2 'Atoll' (Soviet K-13) heat-seeking missiles. Its impressive acceleration and sustained high speed made the MiG-21 the ideal platform for conducting surprise attacks on formations of heavily-laden American fighter-bombers. Often, MiG pilots would succeed in shooting aircraft down before escorting US fighters could react. While the MiG-21 could out-turn the F-4, it lacked the thrust to fight in the vertical, and in a straight-out dogfight the 'Fishbed' was no match for the F-4. The communist machine also had poor rearward visibility (a 50-degree blind cone) and limited downward visibility (*via István Toperczer*)



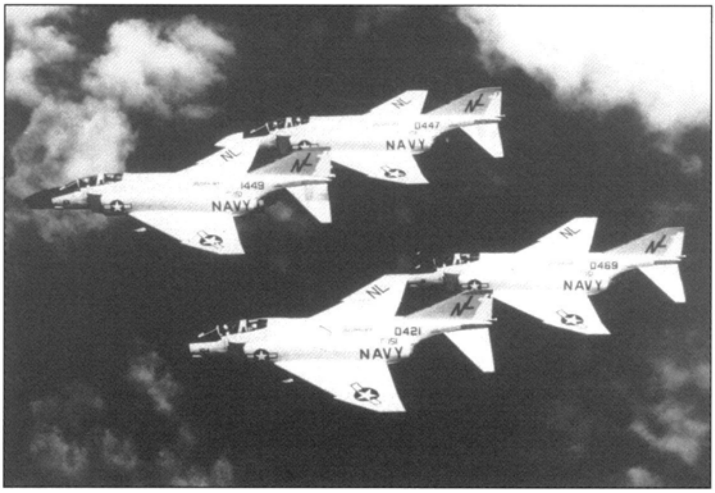
ROLLING THUNDER BEGINS

On 13 February 1965, in accordance with a planned strategy, President Lyndon B Johnson consented to the start of the strategic bombing campaign against North Vietnam, code-named *Rolling Thunder*. However, because of poor weather, and talk of possible negotiations, the strikes were delayed for two weeks. Finally, on 2 March, *Rolling Thunder* commenced with an attack against an ammunition depot at Xom Bong, just south of the 20th Parallel.

The Navy flew its first missions on 15 March, with strikes from the carriers *Hancock* and *Ranger* against the ammunition depot at Phu Qui. Despite the growing number of sorties, no engagements with VPAF MiGs had yet occurred. Some had been seen following strike packages from the target area, but none were bold enough to engage US aircraft. A number of crews speculated that this period represented one of training for the MiGs and their GCIs.

This situation soon changed on 3 April, when four MiG-17s (see *Osprey Combat Aircraft 25 - MiG-17 and MiG-19 Units of the Vietnam War* for further details) attacked a Navy strike package from CVW-21 that had been sent to bomb the Dong Phong Thong Bridge. One F-8 Crusader was badly damaged in the engagement, and no communist jets were downed.

The strike package from the *Hancock* had been escorted by four F-4Bs from *Coral Sea*, although because of communications problems and a lack of mission co-ordination, the Phantom IIs did not realise that the strike formation was under attack until after the event, and therefore did not enter the fray.



Four F-4Bs from VF-151 'Vigilantes' are seen in diamond formation during work-ups for the unit's debut cruise with the Phantom II in 1964. VF-151 was involved in the *Coral Sea's* record breaking 1964-65 *WestPac* that saw the carrier depart its homeport of Alameda, California, on 7 December 1964, and return to its San Francisco base on 1 November 1965. During this time the vessel spent an astounding 167 days on the line in the Gulf of Tonkin – one of the longest in-action periods of any carrier during the entire Vietnam War. Then the sole Phantom II unit within CVA-43's embarked air wing (CVW-15), the 'Vigilantes' were conducting their first *WestPac* with the F-4B following their transition from the F-3B Demon in January 1964 – fighter duties were shared with F-8D-equipped VF-154. The unit was indirectly involved in the first MiG encounter of the Vietnam War on 3 April 1965, when four MiG-17s attacked a strike package from the *Hancock* that was sent to bomb the Dong Phong Thong Bridge. Four F-4Bs were performing a MiGCAP sortie high above the strikers when the mixed force of F-8s and A-4s was attacked by the VPAF fighters. Due to a lack of mission co-ordination between squadrons from different carriers, the strike package was not aware of the radio frequency on which the F-4s were operating, so were unable to call for assistance when the MiGs struck. Fortunately, no Navy aircraft were lost, although a solitary F-8 was forced to land at Da Nang after being hit by cannon fire from the MiGs. Despite seeing much action on cruise, and downing a MiG-17, VF-151 successfully completed the marathon deployment without losing a single jet, either in combat or operationally (*US Navy*)

The beginning of ***Rolling Thunder*** **for the US Navy commenced on 15 March, with strikes launched against the ammunition depot at Phu Qui. Phantom IIs from the** ***Midway*****, such as this VF-21 Alert jet 'spotted' over one of the waist catapults in June 1965, flew flak suppression and TARCAP for those strikes, but did not encounter any MiGs (*****US Navy*****)**

The next day, MiG-17s downed two Air Force F-105Ds from the 355th TFW during a follow-up attack on the bridge.

FIRST MiG KILLS

While skirmishes continued into the spring, little in the way of air-to-air action ensued. However, on 17 June the air war erupted as two F-4B crews from VF-21 became the first American VPAF 'MiG killers' of the Vietnam War.

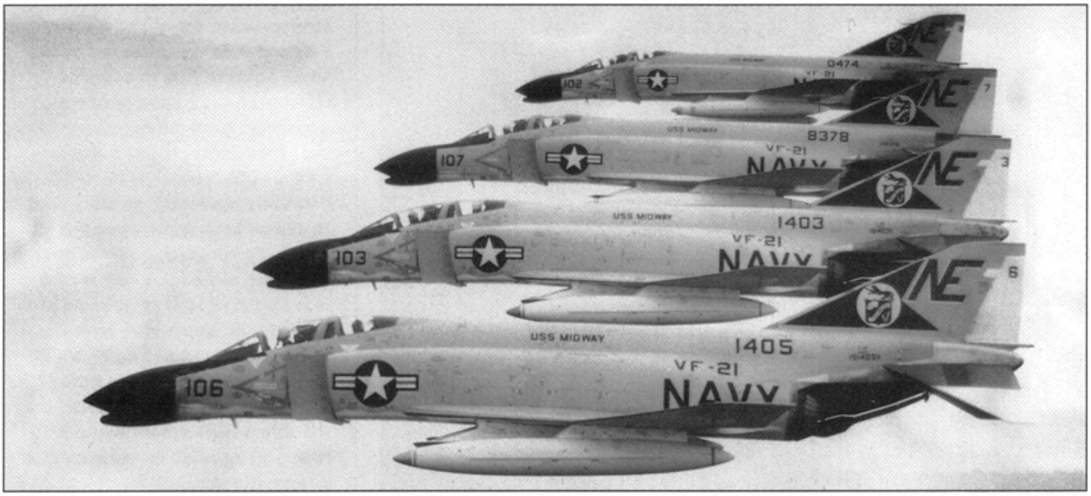
At about mid-morning, a 14-aeroplane strike package from the carriers *Midway* and *Bon Homme Richard* was heading inbound for a strike against the Thanh Hoa Bridge. Spanning the Ma River about 80 miles due south of Hanoi, the bridge provided a direct link between the port of Hai Phong and the mountain passes through which supplies went into South Vietnam via the Ho Chi Minh Trail.

TARCAP for the strike was provided by six F-4Bs, two of which were from VF-21. The Phantom IIs were to establish a six-aeroplane combat air patrol for the attacking Skyhawks, and protect them against any MiGs that attempted to intercept them. Squadron XO, Cdr Lou Page, and Lt John C Smith crewed F-4B BuNo 151488/NE 101, with Lt Jack E D Batson and Lt Cdr Robert Doremus flying F-4B BuNo 152219/NE 102 as their wing. Both jets were armed with two Sidewinders and three Sparrows, and carried single centreline tanks. The following account of this historic engagement comes from Lt Batson;

'About half of the missions we were flying at this time were *Rolling Thunder* strikes. Briefing was in the Air Intelligence Center as usual about two hours before launch. It was a large strike on a military target south of Than Hoa. The US Secretary of the Navy, Paul Nietze, was present. He came to our ready room for our individual squadron brief. Lou Page told him how we would shoot down MiGs.

'We launched, made a running rendezvous with the KA-3 tankers about 75 miles from the ship, and proceeded to our search area in the

More formation flying, this time from VF-21 in the spring of 1964. A year later, on 9 April 1965, ***Freelancer 103*** **almost certainly claimed the US Navy's first MiG kill, but was then lost just minutes later. By then the jet was flying as** ***Showtime 602*** **with VF-96, embarked on the** ***Ranger*****. VF-21 had completed a single** ***WestPac*** **(8 November 1963 to 31 May 1964) with CVW-2 aboard the** ***Midway*** **prior to the unit making its combat debut in April 1965 (*****US Navy*****)**



Amongst VF-21's principal 'customers' during its 1965 *WestPac* was VA-22 'Fighting Redcocks', one of two Skyhawk-equipped light strike units aboard *Midway*. Here, a pair of 'cock-marked' A-4Cs share deck space with *Sundown 101*, the assigned F-4B of VF-21 CO Cdr F A 'Bill' Franke. Following this successful 'MiG killing'cruise, the 'Freelancers' were considered by many naval aviators to be the premier West Coast F-4 unit in respect to the employment of air-to-air tactics. Living up to this accolade, 'Fighting 21' developed and authored the first written fighter tactics doctrine for the F-4B. The manual's summing up of the fighter squadron's mission over North Vietnam read, 'The primary function of Navy BARTARCAP and escort units is to provide warning of the approach of enemy aircraft. Secondarily, the fighter units provide protection as necessary until the attack aircraft can safely retire. Air superiority is not the aim of the fighter units' (*via Angelo Romano*)

vicinity of Ninh Dinh, north-west of Than Hoa. We began patrolling in a north-south pattern in basic search formation – one mile abeam of each other so that we could provide each other with protection from someone sneaking up on our tail. Using our powerful radar to look northward for targets, we listened to the strike group arrive on target, carry out their mission, and depart.

'As the strike group called "feet wet" (over the sea), Lou called for "One more sweep north". Up to then the flight was completely normal, except there was a significant amount of AAA, mostly from Ninh Dinh. As we rolled out of the turn, J C Smith spotted two radar contacts about 45 miles north. Rob Doremus spotted them almost immediately, also.

'We had observed a slight pattern of MiGs appearing late in our missions when our fuel was getting low. I think that we were all suspicious at this point. Lou called for me to move from the search position to the attack position – a three-mile trail and slightly below. We accelerated to approximately 500 knots for better manoeuvrability. The first aeroplane (Page and Smith) was to set up a head-on attack, having made a positive visual ID. Rob and I would manoeuvre for a head-on Sparrow shot.

'J C and Rob talked to each other regarding which radar targets to lock on to, and J C took the farther target, creating a slight offset to the head-on attack. This caused the MiGs to make a turn into the lead jet. When they banked, the very distinctive wing plan of the MiG-17 was visible.

'Lou fired at close to minimum range while shouting "It's MiGs!" I saw his missile fire, guide towards the formation and the warhead detonate. At first I thought it had missed, but then the outer half of the right wing came completely off the MiG and it started rolling out of control. I then put my full attention to the steering information on my radar scope, and I fired at minimum range. Just before firing, the steering dot moved up the screen, causing me to go into a slight climb to keep it centred.

'The missile (AIM-7) fired from the rail on the right wing and swerved under the nose of the aeroplane. I lost sight of the missile, but Rob saw it guide to a direct hit. Also, about this time one of the MiGs flew right by me. I think my missile hit either the Number 1 or Number 2 aircraft.

VF-21's *Sundown 111* is within seconds of completing yet another uneventful BARCAP mission from the *Midway* in 1965, the jet's progress towards the carrier's modest deck area being closely monitored by the air wing's senior Landing Signals Officer (LSO). The sole Phantom II unit within CVW-2 at the time, the 'Freelancers' shared fighter duties with F-8D-equipped VF-111 (*US Navy*)

'My theory is that the first section did a wingover reversal to get behind Lou and J C. That caused my steering dot to climb as I chased them. The second section (at this point only one aeroplane) continued straight by me. The next phase of Lou's tactics was for us to disengage quickly. He was very concerned about trying to turn with a MiG-17 – our most likely foe – or MiG-19. We disengaged by lighting afterburner, climbing up through an overcast and rendezvousing. Then we reversed heading, re-established the "hunter" (search) formation and went back through the clouds looking for the rest of the MiGs. We saw smoke trails from our missiles, but no MiGs and one parachute.

Firmly clutching their 'coffee' cups, filled with scotch, a relaxed Lt Jack Batson (far left) and Cdr Lou Page join Lt Cdr Robert Doremus and Lt J C Smith in VF-21's Ready Room for an impromptu mission debrief. This photograph was taken soon after the crews had trapped back aboard the *Midway* following their history-making 17 June engagement with VPAF MiG-17s. Note the bullet bandoleers around the waists of Batson and Doremus (*US Navy via Naval Aviation Museum*)

'By this time we were below bingo fuel, so we headed back to *Midway*. Along the way we were offered refuelling, but we declined because if something went wrong we might not make it – we had just enough fuel to land. I was actually showing 400 lbs (sufficient fuel for just three minutes of flying) at the top of the glide slope. After landing, I taxied by our CO, Cdr Bill Franke, who was jumping up and down with his hands over his head. After shut down, Rob came up from the back seat, shook my hand, and said "Four more to go"!

'Lou was escorted up to the Flag bridge where he was congratulated by Secretary Nietze. To get to our ready room, we had to pass through the F-8 (VF-111) ready room, where they were yelling and cheering. Our own ready room was packed. Someone handed me a coffee cup. It

Secretary of the Navy Paul H Nietze congratulates Cdr Lou Page following his 'MiG killing' mission. Standing behind the VF-21 XO is Rear Adm William F Bringle, Commander Task Force 77. Note that Page is still wearing his harness and g-suit – he had stepped out of his F-4 literally minutes prior to this photograph being taken (*via Peter Mersky*)

Above and top
Having returned to the *Midway* following their debrief in Saigon, the victorious crews pose with their F-4Bs 24 hours after downing their MiGs. The top photo features Lt Dave Batson and Lt Cdr Robert Doremus, and the bottom shot Cdr Lou Page and Lt J C Smith. Note squadron CO Cdr Bill Franke's name stencilled on the canopy rail behind XO Page's head

was full of scotch! Lou quieted everybody down and gave a brief review of what happened. Then we were taken to Air Intelligence (I still had my "coffee" cup), where we told the Admiral and others what had happened. It was an amazing experience. We were told to get some clothes and get ready to go to Saigon, where we were to participate in the daily Press briefing, dubbed the "Five O'Clock Follies".'

Following the briefing, the men stayed as guests of Gen Westmoreland at his private home. All four duly received the Silver Star Medal for their gallantry. Unfortunately, just a little over a month later, on 24 August, Lt Cdr Rob Doremus' Phantom II (BuNo 152215/NE 112, flown by VF-21's CO, Cdr Franke) was hit by a SAM during a follow-up attack on the Thanh Hoa Bridge, and he spent the remainder of the war as a PoW. This was VF-21's sole combat loss during the entire deployment.

J C Smith, meanwhile, went on to become one of the first instructors, and later commanding officer, at the Navy's Fighter Weapons School.

The first two F-4 kills of the war were a proud moment for the Navy, although they tended to prolong the thought that the Phantom II could be successfully employed against the MiG without dogfighting. The incident, after all, was a classic non-manoeuvring intercept, for which the Demon and early Phantom II crews had trained.

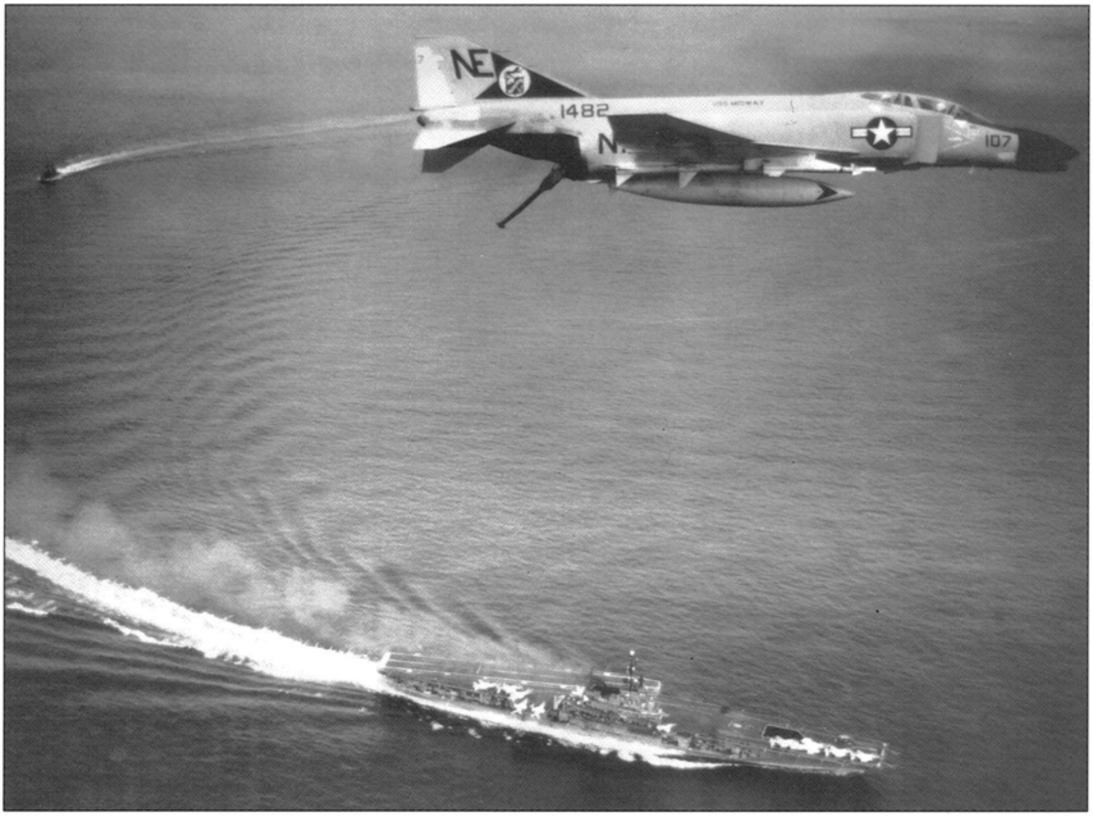
As a postscript to this action, Lt Dave Batson was finally awarded a second MiG kill from this engagement some 32 years later following the declassification of documents relating to the 17 June shoot downs. He had always maintained that a third MiG had been damaged by ingesting debris from its wingman after his Sparrow had exploded. Indeed, shortly after the engagement the two VF-21 crews had heard that only one of the four MiGs that they had encountered had returned to base.

The official documentation, and the backing of Batson's second kill theory by his then Carrier Air Group (CAG) CO, Cdr Bob Moore, was enough for the third MiG to be officially classified as destroyed. The VPAF, on the other hand, stated that the third MiG lost on this day had flown into mountains in the area because of poor weather, and that two F-4s had also been shot down during the course of the engagement.

Just as in previous conflicts, in Vietnam successful aircrew were quick to praise their groundcrews for providing them with serviceable aircraft that proved capable of doing the job when required. Cdr Page and Lt J C Smith pose for a group shot with the sailors specifically tasked with arming and maintaining *Sundown 101* (*via Peter Mersky*)

Bottom page 29
This VF-151 jet, seen formating with an RA-3B from VAP-61 during a spring 1965 combat sortie, later scored a MiG-17 kill with VF-51 on 11 June 1972 (*Don J Willis*)

***Sundown 107* overflies CVA-41 with its hook down, prior to breaking hard left into the landing circuit. Note that both the carrier and its plane guard destroyer are in the process of turning into wind prior to commencing the recovery cycle. Photographed on *Yankee Station* in June 1965, this aircraft has a typical CAP load-out of two AIM-7 Sparrows (fuselage) and two AIM-9 Sidewinders (wing stations) (*US Navy via Peter Mersky*)**



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Fuelled and armed, three F-4Bs from VF-151 await their crews aboard the *Coral Sea* in early April 1965. CVA-43 was nearing the end of its second period (of six) on the line when this shot was taken from 'Vulture's Row' by VAP-61 aircrewman Lt Don J Willis (*Don J Willis*)

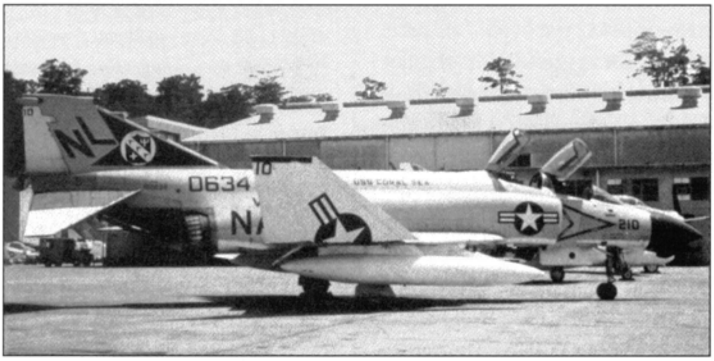
MORE MiG KILLS

Three days after VF-21's MiG-killing exploits, another squadron within *Midway's* CVW-2 celebrated the destruction of a 'Fresco', although this time the engagement was hardly a typical fighter-versus-fighter action. VA-25's Lt Charlie Hartman proved the folly of leaving guns out of the F-4 when he downed a MiG-17 at low-level over Mai Chau, in Hoa Binh Province, with the quartet of 20 mm cannon fitted into the wings of his piston-engined A-1H (BuNo 139768).

Proving that this was no one-off, a second MiG-17 would fall to the guns of the venerable Douglas Skyraider on 9 October 1966.

The next US Navy Phantom II MiG kill was not scored until 6 October, when a *Coral Sea*-based F-4B of VF-151 (operating as part of CVW-15) downed a single MiG-17 during a BARCAP mission. Flying *Switch Box 107* (BuNo 150634), Lt Cdr Dan MacIntyre and RIO Lt(jg) Alan Johnson were covering a strike against a bridge near Kep airfield.

As they set up their CAP orbit at 2500 ft (the clouds were between 3000 and 4500 ft), Johnson picked up multiple contacts on his radar that were 18 miles away, and closing. At first, it appeared that the blips might be F-8s, as they were known to be in the vicinity with the strike group, and had been seen on Johnson's scope earlier in the mission. But the three-ship line astern formation was a dead-ringer for VPAF MiGs.



BuNo 150634 was the mount of Lt Cdr Dan MacIntyre and Lt(jg) Alan Johnson when they downed their MiG-17 on 6 October 1965. It is seen in the US prior to the 1965 *WestPac* – note its unusual intake warning marking (*via Angelo Romano*)

At about eight miles Johnson achieved a missile lock on the second MiG, and at three miles MacIntyre established a visual ID, calling 'three MiG-17s on the nose', crossing from right to left at about 1000 ft above his Phantom II. MacIntyre slid in behind the trailing MiG as it crossed and fired a Sparrow, sending the 'Fresco' earthward streaming smoke.

When MacIntyre turned his attention to the remaining MiGs, he saw the lead jet, now turning behind him for a shot, off to his left. The second MiG, however, was virtually in front of MacIntyre's F-4B, and he was closing on it fast. Knowing that the lead 'Fresco' would not fire with one of his own just ahead of MacIntyre, he darted after the trailing MiG, closing on him with

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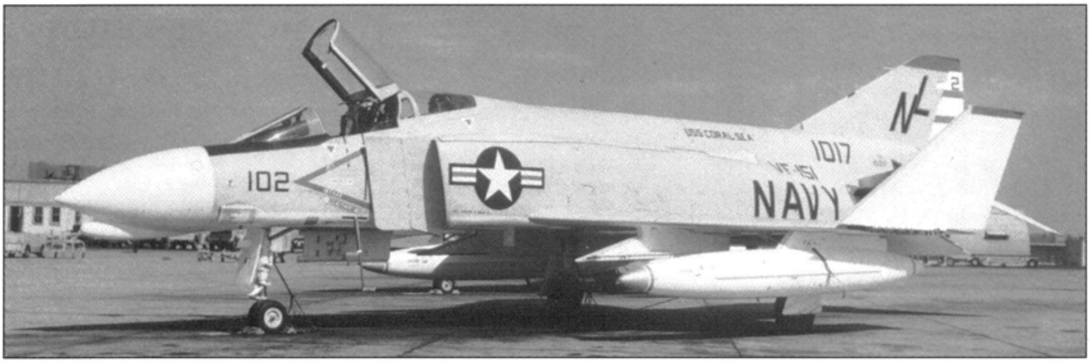


close to 200 knots of overtake. MacIntyre and Johnson's Phantom II rolled directly over the MiG's canopy in full afterburner, before the former pulled a hard barrel roll left and started to converge on the lead MiG inside his turn. The trailing MiG, apparently shaken by this audacious manoeuvre, headed for Phuc Yen.

As MacIntyre completed his turn, he rolled out behind the departing MiG and savoured his next shot – one that would give him two kills for the day. But the lead MiG had now turned his attention to MacIntyre's wingman, and was in pursuit. Although longing for the second MiG, MacIntyre knew that his wingman was in trouble, and he turned his F-4 around. The lead MiG quickly moved into position on MacIntyre's wingman and entered into a turning battle, firing his 37 mm cannon at the helpless Phantom II.

At first, MacIntyre was above the MiG and unable to break through the ground-clutter for a lock. When he finally reached the MiG's altitude, and Johnson's radar obtained a Sparrow lock, the aggressive VPAF pilot broke off his attack and headed for China. MacIntyre followed for a while, but was unable to secure a missile lock, so he broke off the fight and joined up on his wing, who was returning to the carrier.

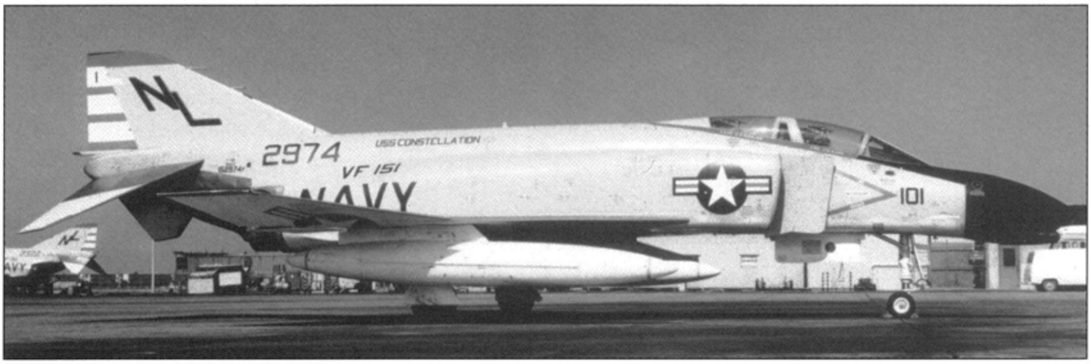
1965 finally came to an end with a 37-day bombing halt, known as the Christmas bombing pause, that continued to 30 January 1966. During the year, three VPAF MiGs had been officially shot down by F-4B crews, and no Navy Phantom IIs had in turn been lost to Vietnamese fighters.

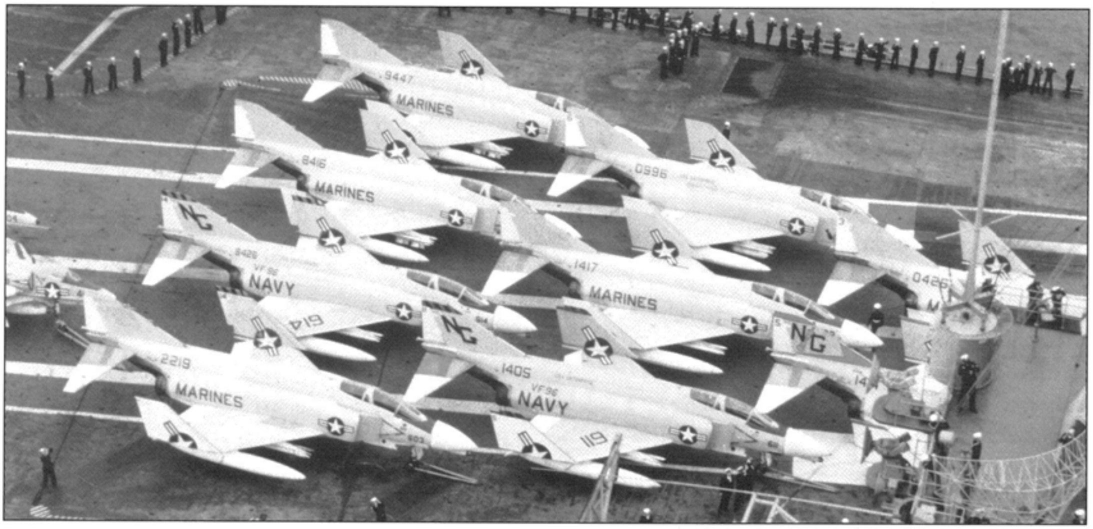
THE YEAR OF UPS AND DOWNS

1966 saw the Navy experience little MiG activity until the late-spring. The Air Force, on the other hand, had fought a number of engagements,

This spotless VF-151 F-4B was photographed on the tarmac at NAS Miramar in September 1964. The unit had yet to undertake a *WestPac* with the McDonnell fighter when this shot was taken, although its work-ups were well underway aboard the *Coral Sea*. As with a number of the Phantom IIs supplied to the 'Vigilantes' in early 1964, this particular airframe had initially seen operational service with the USAF (as 62-12194). One of 29 F4H-1s loaned to the Air Force in 1962, this jet served with the 4453rd Combat Crew Training Wing at MacDill AFB, Florida, until early 1964, when it returned to Navy service with VF-151 (*US Navy via Naval Aviation Museum*)

VF-151 returned to the Gulf of Tonkin in 1966, this time aboard the *Constellation*. Parked on the Miramar ramp between sorties, this F-4B was assigned to the unit CO, Cdr J O Ward. Again, the 'Vigilantes' completed their second combat tour without suffering any losses through enemy action, although this time two aircraft and four aircrew were killed in operational accidents (*via Brad Elward*)





The *Enterprise* moves slowly beneath the Golden Gate Bridge on 21 June 1966 to signal the end of its *WestPac*, which had started from Alameda on 26 October 1965. Chained down in the centre of the flightdeck, these F-4Bs display an interesting mix of markings. The aircraft wearing *MARINES* titling had been issued to VF-92 and VF-96 three days after their final line period had come to an end on 5 June. It was standard procedure for Navy F-4 units coming off *Yankee Station* at the end of their *WestPac* to swap their 'low time' jets for 'high time' examples from land-based Marine Corps squadrons in-theatre – these particular jets came from MCAS Iwakuni-based VMFA-323. BuNo 152219 (NG 603) was the F-4B used by VF-21's Lt Batson and Lt Cdr Doremus to down a MiG-17 on 17 June 1965 (*via Brad Elward*)

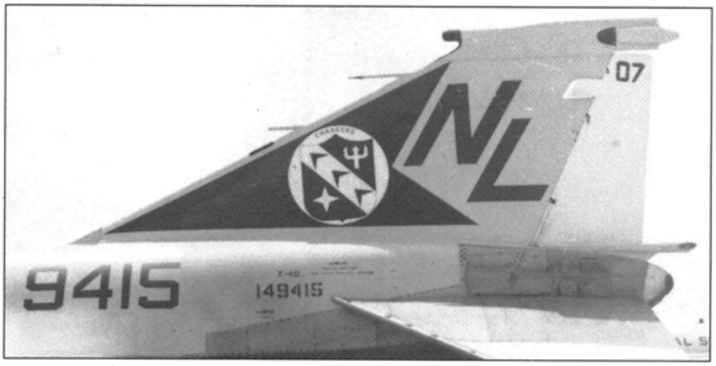
resulting in six MiG kills being claimed between 23 and 30 April – the most significant of these occurred on 26 April, when a 480th TFS/35th TFW F-4C crew destroyed the first VPAF MiG-21.

The small, sleek fighter had begun arriving in North Vietnam in late 1965, although it did not make its combat debut until early 1966. The Navy would have to wait until 9 October to claim its first 'Fishbed', when the CO of VF-162, Cdr Dick Bellinger, 'bagged' one with a Sidewinder whilst flying F-8E BuNo 149159 off the *Oriskany*. That same day the 'Fishbed' may have claimed its first Navy Phantom II kill in the shape of VF-154 F-4B BuNo 152093 off the *Coral Sea*. Its crew (Lt Cdr Charles Tanner and Lt Ross Terry) maintain that they were hit by AAA, although the Vietnamese tortured them until they confessed that they had been downed by a MiG.

Returning to the summer, June 1966 had seen some of the heaviest MiG fighting to date, beginning on the 12th when F-8Es from VF-211 mixed with MiG-17s, downing one confirmed and one probable (the second aircraft was confirmed destroyed, but never officially credited to pilot, Cdr Hal Marr, who also downed the other 'Fresco').

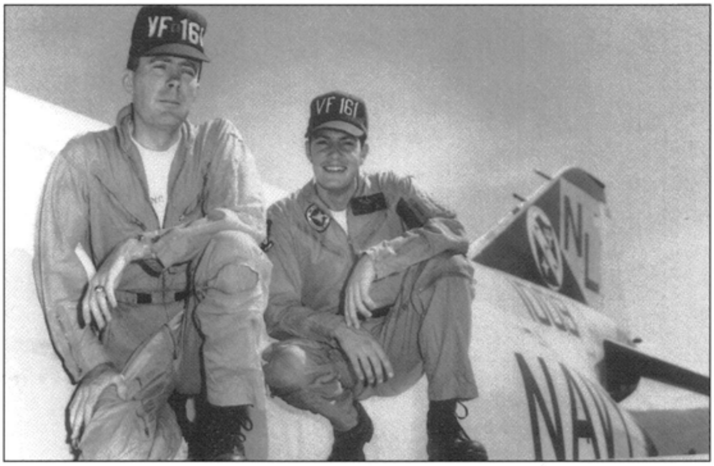
Two days later the Navy scored another probable kill when an F-4B from *Ranger's* VF-143 was scrambled to intercept an approaching bogie. The crew locked onto the contact and fired a Sparrow, and moments later the blip 'disappeared' from the RIO's radar screen. Unfortunately for the crew, no wreckage was found and confirmation could not be made.

MiG activity continued on 21 June, when four F-8Es from VF-211 were jumped by four MiG-17s north-east of Hanoi. Two MiGs were shot down at the cost of one F-8 destroyed (BuNo 149152, flown by Lt Cdr Cole Black) and one damaged. This date marked the first loss of a US Navy fighter in air-to-air combat against the VPAF.



VF-161's distinctive fin markings in 1966 (*via Peter Davies*)

VF-161's FIRST MiG



Lt William McGuigan and Lt(jg) Robert Fowler pose on the wing of their assigned F-4B (BuNo 151009) the day after they had downed a MiG-17 on 13 July 1966 in BuNo 151500. BuNo 151009 was shot down by AAA on 22 October 1966, and although its pilot, Lt Cdr E P McBride, was killed, his RIO, Lt(jg) E U Turner, was recovered alive. This was the sole Phantom II lost by VF-161 on cruise (*via Peter Mersky*)

On the morning of 13 July Air Wing 15, embarked on the *Constellation*, launched an *Alpha* strike against the Co Trai railroad and highway bridge. VF-161 was assigned CAP duties for the flight, and duly launched four F-4Bs. As the strike force was retiring from the target area, the Phantom II crews decided to make a final sweep. As they did so, they received an urgent call from two Skyhawks that had been flying an 'Iron Hand' (SAM suppression) mission. They were being chased by a gaggle of MiGs.

The four F-4s quickly engaged six MiG-17s, and Lt William 'Squeaky' McGuigan and Lt(jg) Robert Fowler (flying BuNo 151500/NL 216) emerged from the dogfight with a single Sidewinder kill to their credit. In the wake of the shoot-down, the following message was sent to CTG 77.8 from the Commander, Seventh Fleet;

'I am pleased to see that again the MiGs were visually detected before they attacked our fighters. This, and the repeated return to home plate with undamaged aircraft, is proof positive our pilots are flying heads-up missions.

NH
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VF-114
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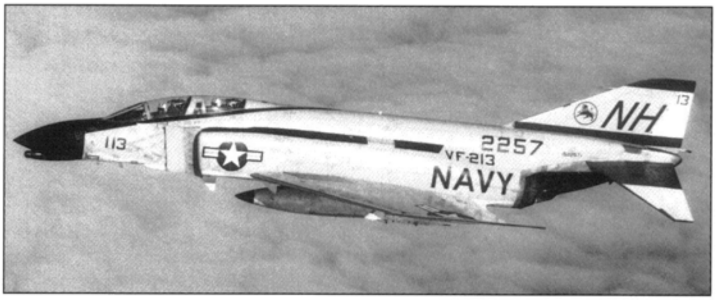
NH
2241
VF-114
NAVY

A VF-114 F-4B heads for a 'three-wire' on the *Kitty Hawk* in late 1966. During CVW-11's first line period aboard CVA-63 on the 1966-67 *WestPac*, both VF-114 and VF-213 fitted the Mk 4 gun pod to the centreline station of their jets, and relied on two external wing tanks on the outboard stations in place of the centreline store. However, as noted by VF-114's records, 'the gun pod proved undesirable, and during the remainder of the deployment the 600-gal centreline tank configuration was standardised for both fighter and attack missions'



No fewer than six Phantom IIs were lost in combat by CVW-11 during its first Vietnam deployment, aboard the *Kitty Hawk*, in 1965-66. The last of these was this particular jet, BuNo 152257, which was struck by AAA over Laos on 18 May 1966 – the carrier pulled out of the Gulf of Tonkin four days later. The crew of 'Black Lion 113', Lt Cdrs C N Sommers (pilot) and W K Sullivan (RIO), were successfully recovered (*via Robert F Dorr*)

'Good show *Rock River 216*.'

The next two Navy MiG kills were claimed by Cdr Dick Bellinger in an F-8E on 8 October and by Lt(jg) William Patton in an A-1H just 24 hours later. The Navy's Phantom II force had to wait until the evening of 20 December for its next aerial successes, which took the form of two slow-moving Antonov An-2 biplane transports that were detected by *Red Crown* as they flew along the North Vietnamese coast.

The only confirmed non-MiG kills claimed by the Americans during the Vietnam conflict (VF-31's Cdr Sam Flynn almost certainly 'bagged' a third An-2 in 1972, although he was never officially credited), the An-2s were swiftly despatched by single AIM-7E Sparrow rounds fired from the alert F-4Bs launched off the *Kitty Hawk*.

The crews involved in this one-sided action were Lt Denny Wisely (who would claim a MiG-17 in April 1967, and eventually attain the rank of rear admiral) and Lt(jg) David Jordan from VF-114, flying BuNo 153022/NH 215, and VF-213's Lt David McCrea and Ens David Nichols in BuNo 153019/NH 110. This engagement brought the year-end tally to 11 kills for the Navy.

1966 had seen a marked increase in the tenacity and aggression displayed by attacking MiG pilots, as well as the deployment of more fighters by the VPAF. The communist pilots were now working closely with GCI units at Phuc Yen and Bac Mai, and were demonstrating that they could 'sneak up' on US strike packages virtually undetected. The VPAF had also recognised that it was more important to concentrate on the bombers, forcing them to jettison their loads, than it was to tangle with the American fighters.

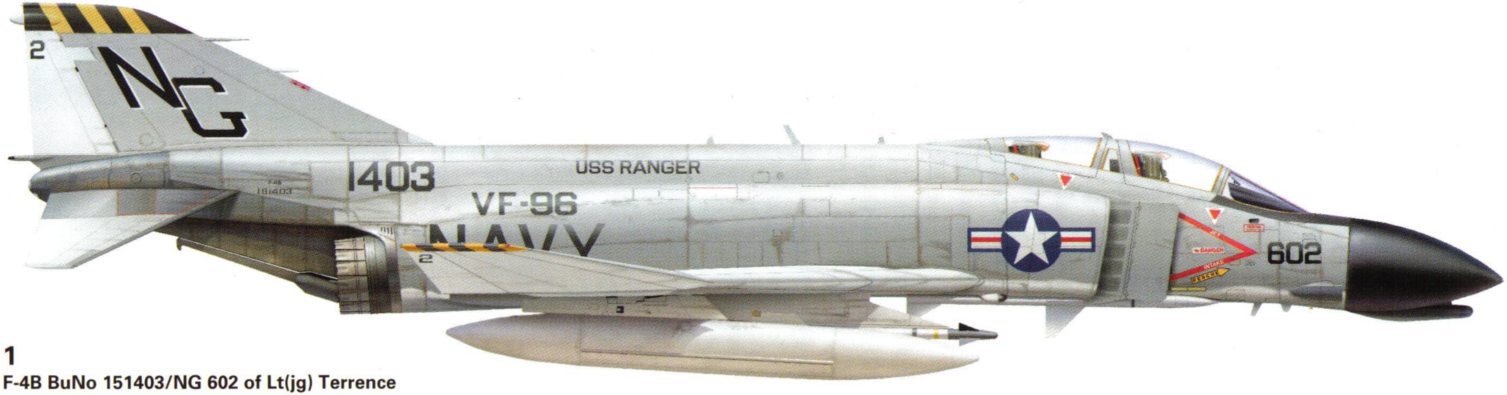
Indeed, it was becoming clear that the MiGs had settled into a pattern of attack that would continue throughout the war – MiG-17s intercepting fighter-bombers primarily at low-altitudes, while MiG-21s attacked aircraft at high-altitudes. Moreover, by December, the MiGs were actively contesting all US strikes in and around Hanoi and Hai Phong, and their attacks had forced approximately 20 per cent of all strikes into Pak VI to jettison their loads before reaching their targets.

Left
Amongst the 22 Phantom IIs deployed on the *Kitty Hawk* in 1965 were a handful of datalink equipped F-4Gs assigned to VF-213. Externally identical to a standard F-4B, these jets stood out due to their experimental Olive Drab camouflage which was trialled during the cruise. Neither the datalink system or the camouflage proved overly successful, and the surviving G-models were reconfigured as standard F-4Bs and resprayed in gull grey and white at the end of the deployment (*via Robert F Dorr*)

10
NH
110
3019
VF-213
NAVY

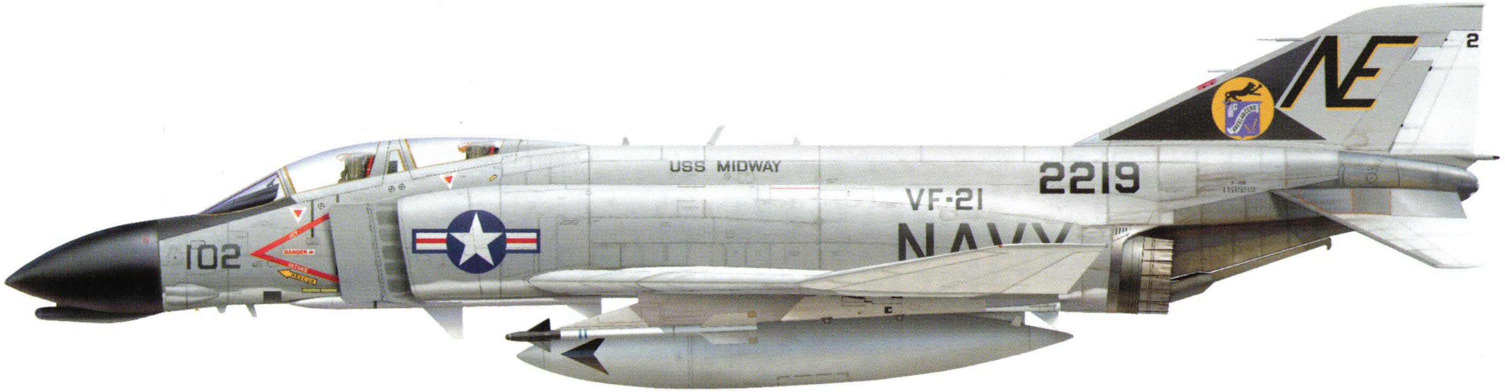
VF-213's 'An-2 killing' F-4B BuNo 153019 drops a full load of 500-lb Mk 82 'iron' bombs over South Vietnam early in its 1966-67 *WestPac* (*via Aerospace Publishing*)

COLOUR PLATES


2
NG
1403
USS RANGER
VF-96
NAVY
602

1

F-4B BuNo 151403/NG 602 of Lt(jg) Terrence M Murphy and Ens Ronald J Fegan, VF-96, USS *Ranger*, 9 April 1965

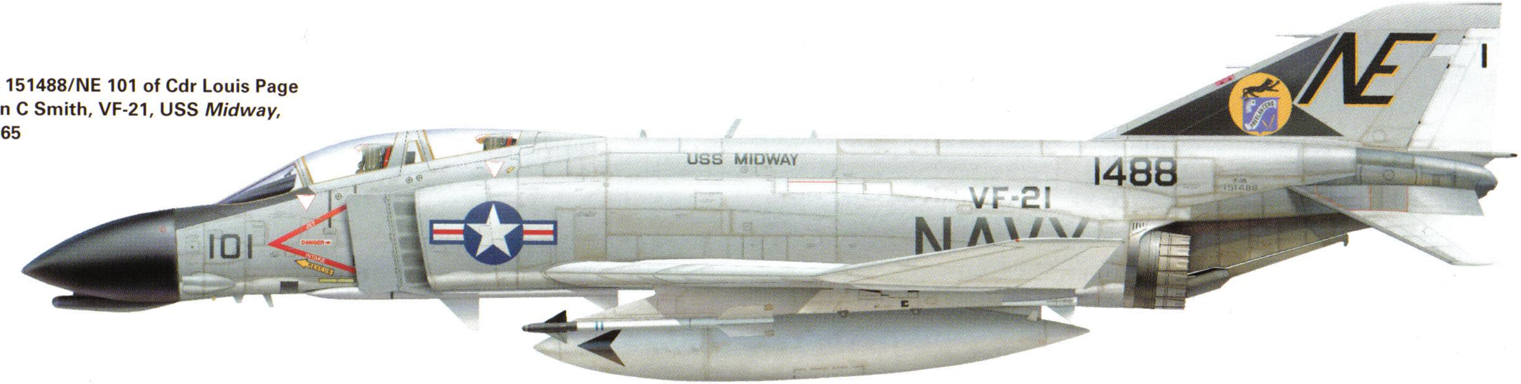

2
NE
USS MIDWAY
2219
VF-21
NAVY
102

2

F-4B BuNo 152219/NE 102 of Lt Jack E D Batson and Lt Cdr Robert B Doremus, VF-21, USS *Midway*, 17 June 1965

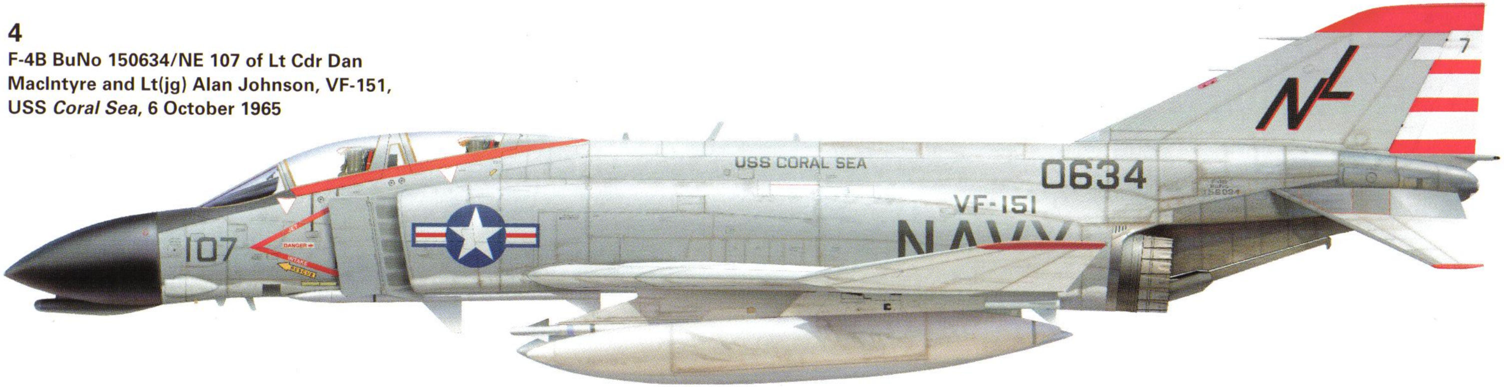
3

F-4B BuNo 151488/NE 101 of Cdr Louis Page and Lt John C Smith, VF-21, USS *Midway*, 17 June 1965


NE
1
USS MIDWAY
1488
VF-21
NAVY
101
DANGER
INTAKE

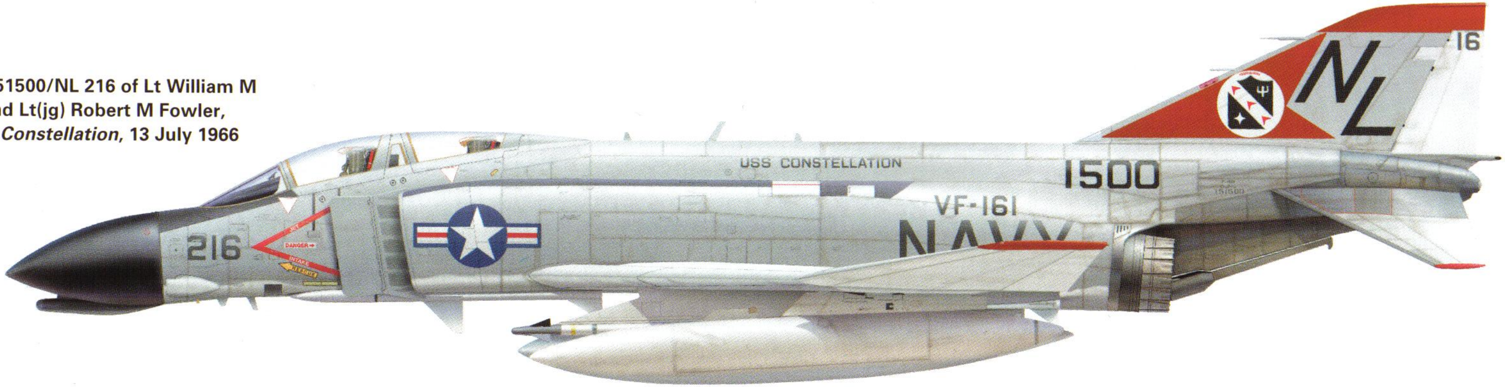
4

F-4B BuNo 150634/NE 107 of Lt Cdr Dan MacIntyre and Lt(jg) Alan Johnson, VF-151, USS *Coral Sea*, 6 October 1965


NL
7
USS CORAL SEA
0634
VF-151
NAVY
107
DANGER
INTAKE

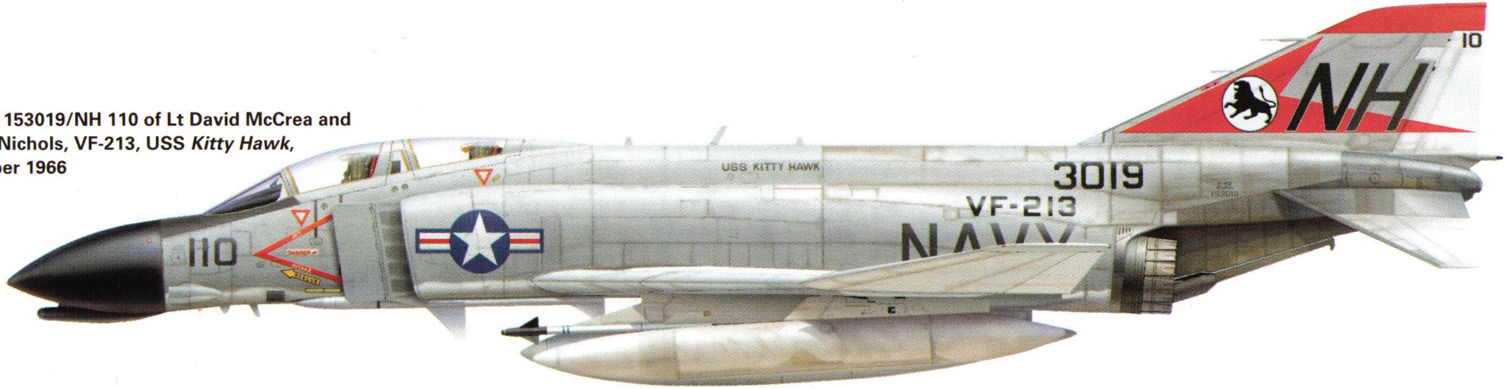
5

F-4B BuNo 151500/NL 216 of Lt William M McGuigan and Lt(jg) Robert M Fowler, VF-161, USS *Constellation*, 13 July 1966


NL
16
USS CONSTELLATION
1500
VF-161
NAVY
216
DANGER
INTAKE

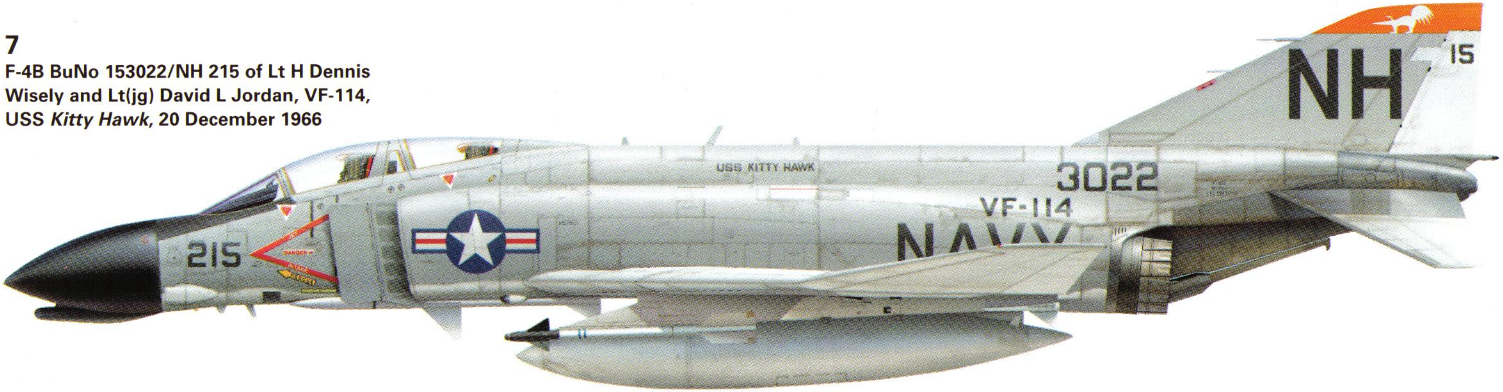
6

F-4B BuNo 153019/NH 110 of Lt David McCrea and Ens David Nichols, VF-213, USS *Kitty Hawk*, 20 December 1966


10
NH
USS KITTY HAWK
3019
VF-213
NAVY
110
DANGER
INTAKE

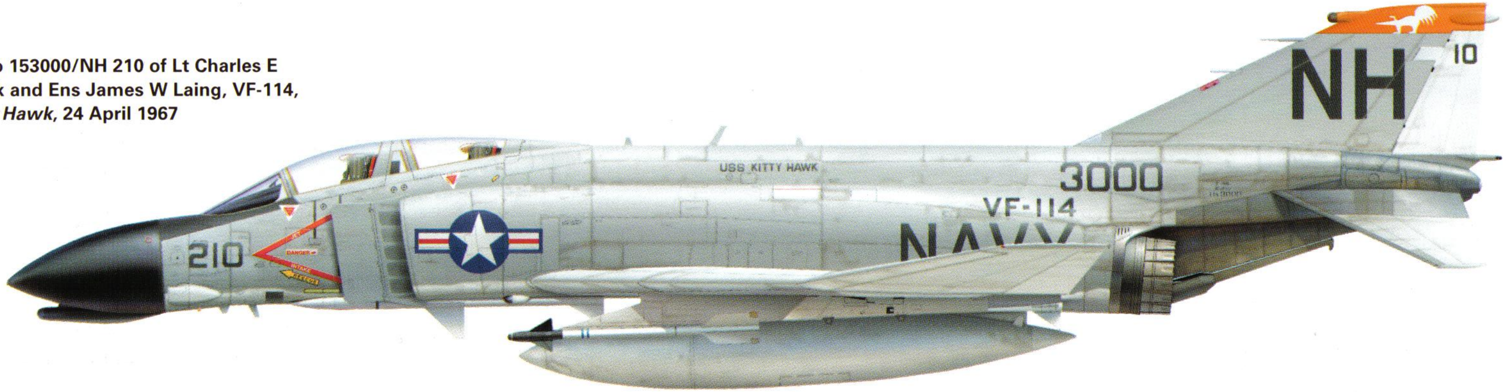
7

F-4B BuNo 153022/NH 215 of Lt H Dennis Wisely and Lt(jg) David L Jordan, VF-114, USS *Kitty Hawk*, 20 December 1966


NH
15
USS KITTY HAWK
3022
VF-114
NAVY
215
DANGER
INTAKE

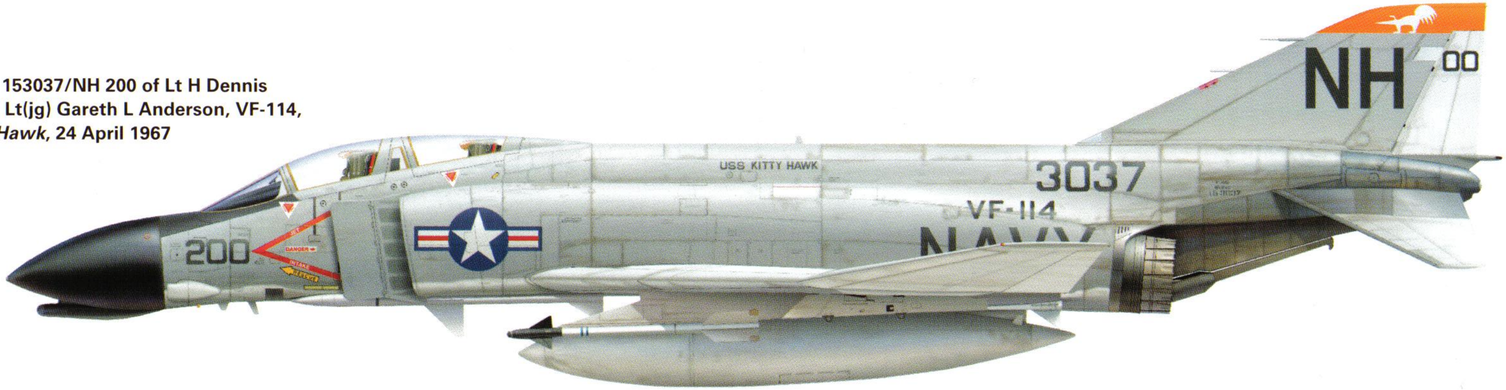
8

F-4B BuNo 153000/NH 210 of Lt Charles E Southwick and Ens James W Laing, VF-114, USS *Kitty Hawk*, 24 April 1967


NH
10
USS KITTY HAWK
3000
VF-114
NAVY
210
DANGER
INTAKE

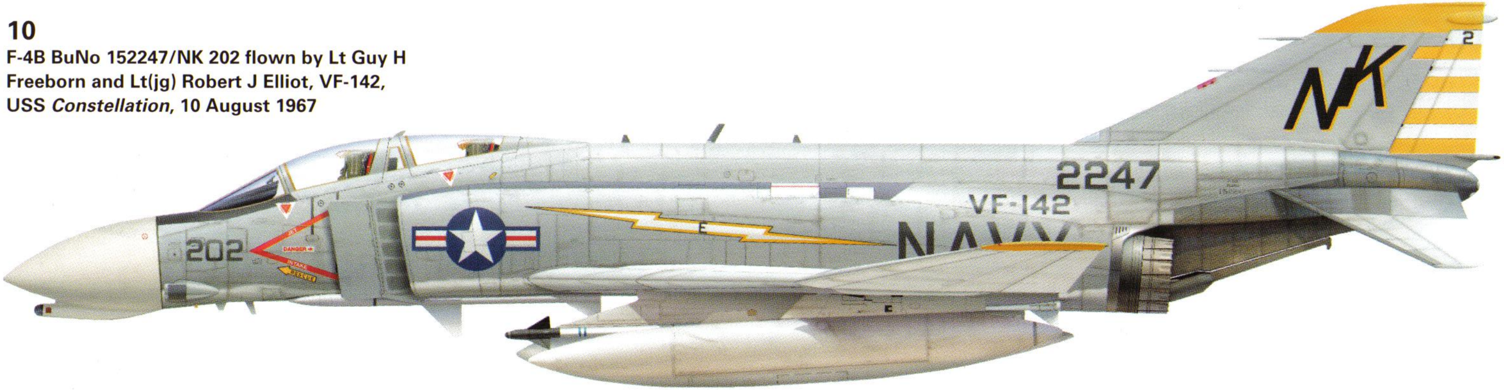
9

F-4B BuNo 153037/NH 200 of Lt H Dennis Wisely and Lt(jg) Gareth L Anderson, VF-114, USS *Kitty Hawk*, 24 April 1967


NH
00
USS KITTY HAWK
3037
VF-114
NAVY
200
DANGER
INTAKE
RESCUE

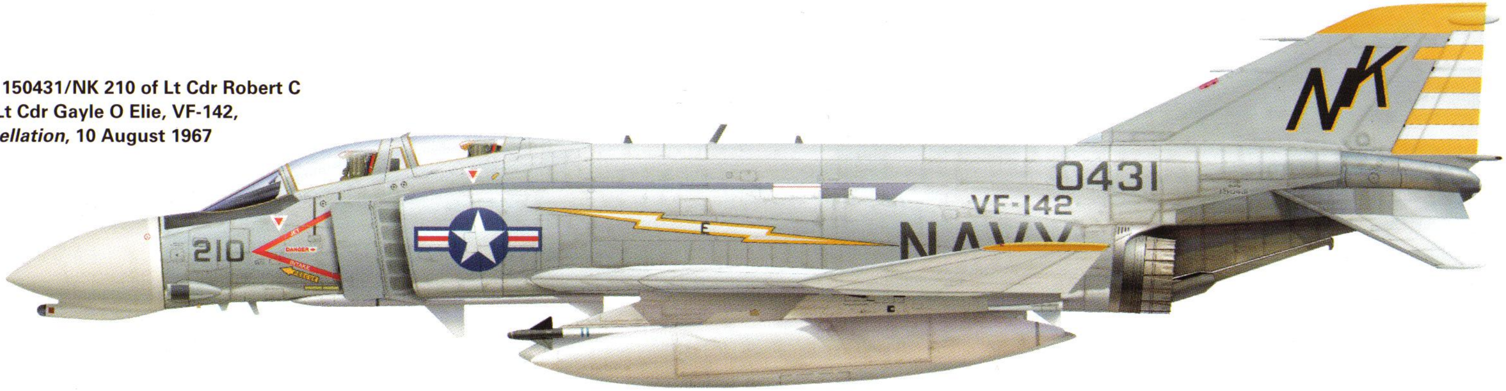
10

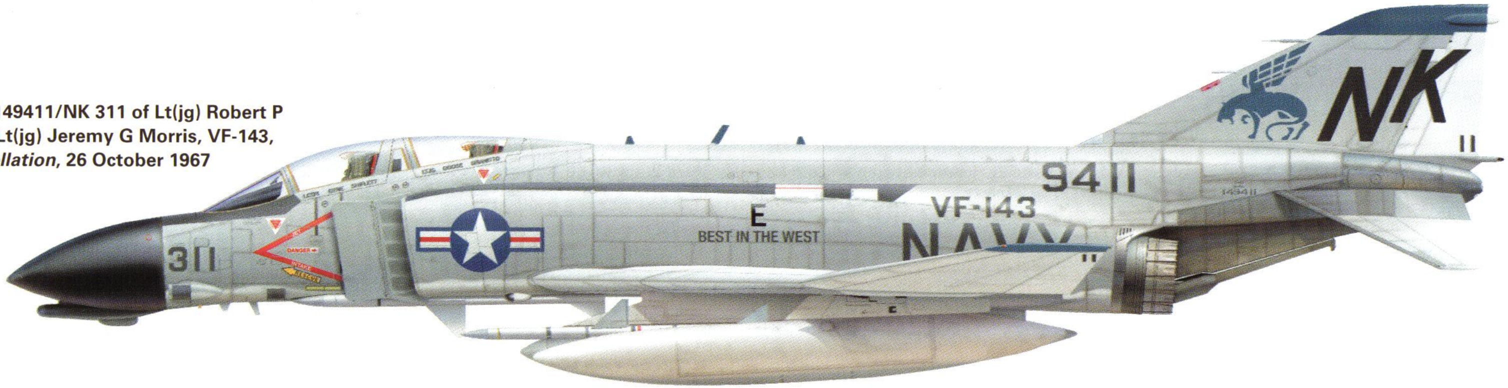
F-4B BuNo 152247/NK 202 flown by Lt Guy H Freeborn and Lt(jg) Robert J Elliot, VF-142, USS *Constellation*, 10 August 1967


NK
2
2247
VF-142
NAVY
E
202
DANGER
INTAKE
RESCUE

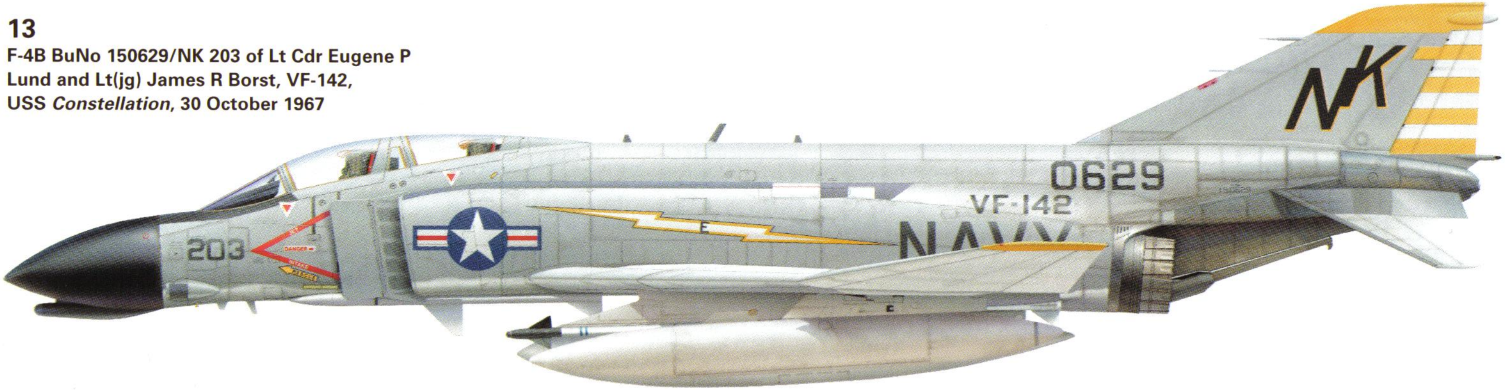
11

F-4B BuNo 150431/NK 210 of Lt Cdr Robert C Davis and Lt Cdr Gayle O Elie, VF-142, USS *Constellation*, 10 August 1967

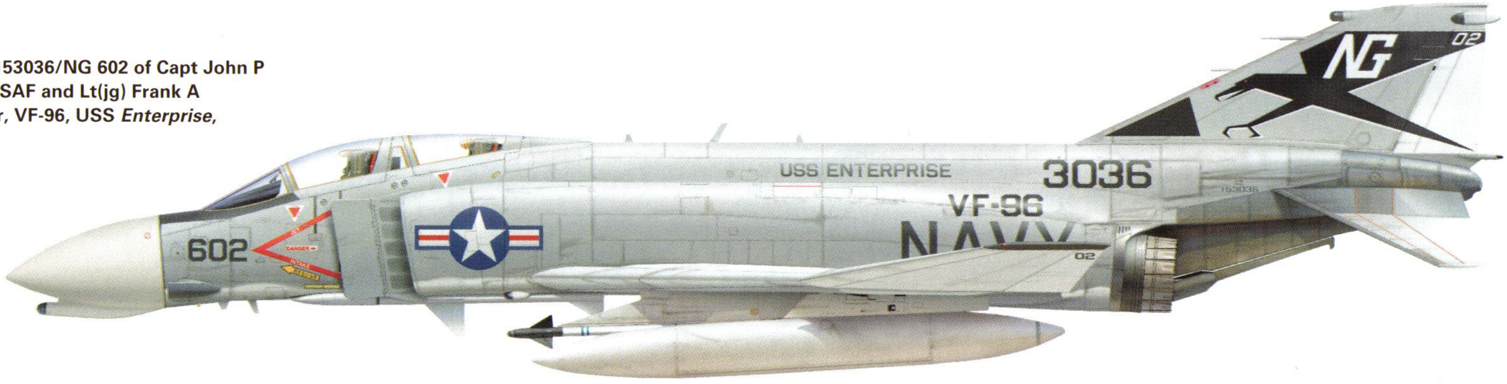

NK
0431
VF-142
NAVY
E
210
DANGER
INTAKE
RESCUE


NK
9411
VF-143
NAVY
E
BEST IN THE WEST
311
DANGER
INTAKE
149411

12
F-4B BuNo 149411/NK 311 of Lt(jg) Robert P Hickey and Lt(jg) Jeremy G Morris, VF-143, USS *Constellation*, 26 October 1967


NK
0629
VF-142
NAVY
E
203
DANGER
INTAKE
150629

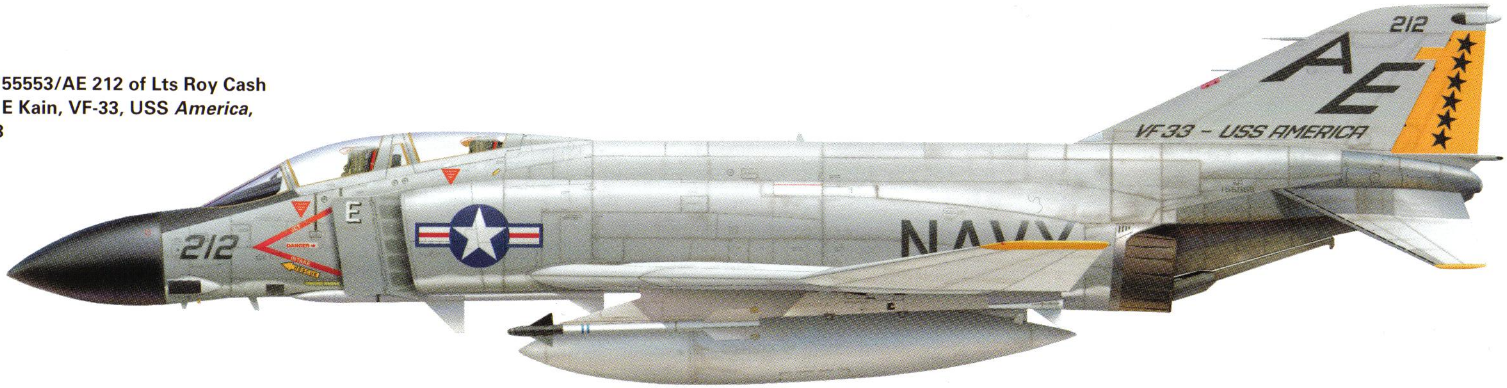
13
F-4B BuNo 150629/NK 203 of Lt Cdr Eugene P Lund and Lt(jg) James R Borst, VF-142, USS *Constellation*, 30 October 1967


NG
02
USS ENTERPRISE
3036
VF-96
NAVY
602
DANGER
INTAKE
153036

14
F-4B BuNo 153036/NG 602 of Capt John P Heffernan USAF and Lt(jg) Frank A Schumacher, VF-96, USS *Enterprise*, 9 May 1968

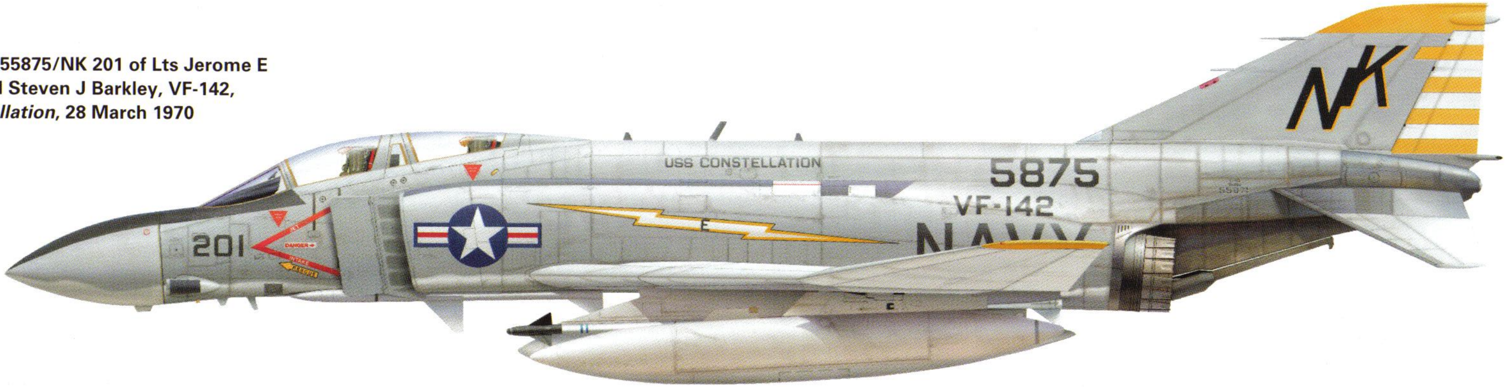
15

F-4J BuNo 155553/AE 212 of Lts Roy Cash and Joseph E Kain, VF-33, USS *America*, 10 July 1968


212
AE
VF33 - USS AMERICA
E
212
NAVY

16

F-4J BuNo 155875/NK 201 of Lts Jerome E Beaulier and Steven J Barkley, VF-142, USS *Constellation*, 28 March 1970


NK
USS CONSTELLATION
5875
VF-142
NAVY
201
E

NE
111
2218
USS MIDWAY

1

NE
1482

2

0446
NAVY

3

NL
4
USS CORAL SEA
VF 151
NAVY
104

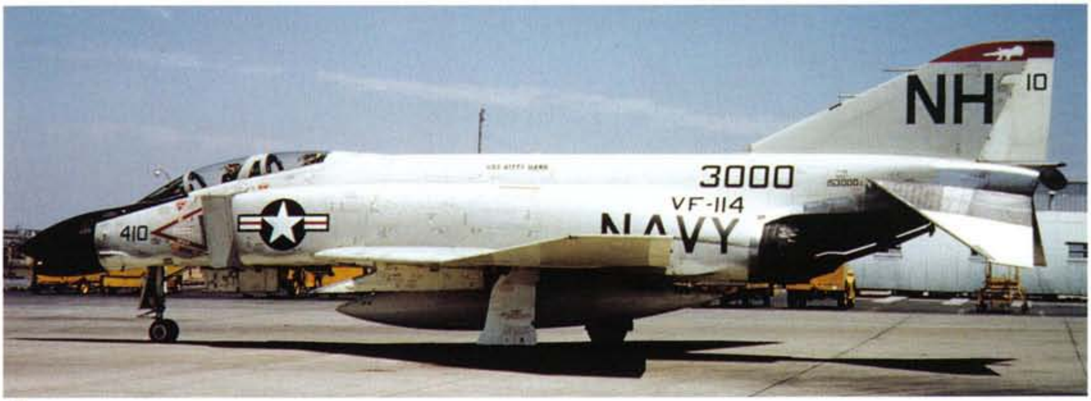
4

NL
2316
VF 161
NAVY

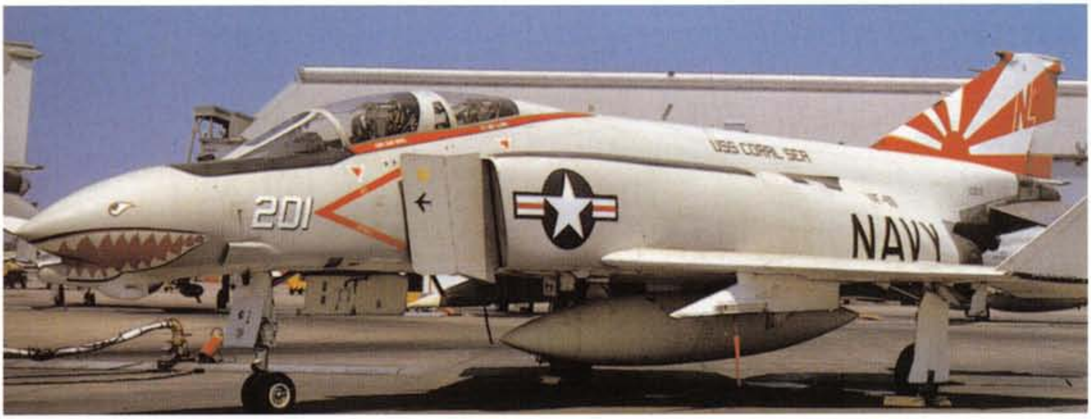
5

NG
VF-96
NAVY

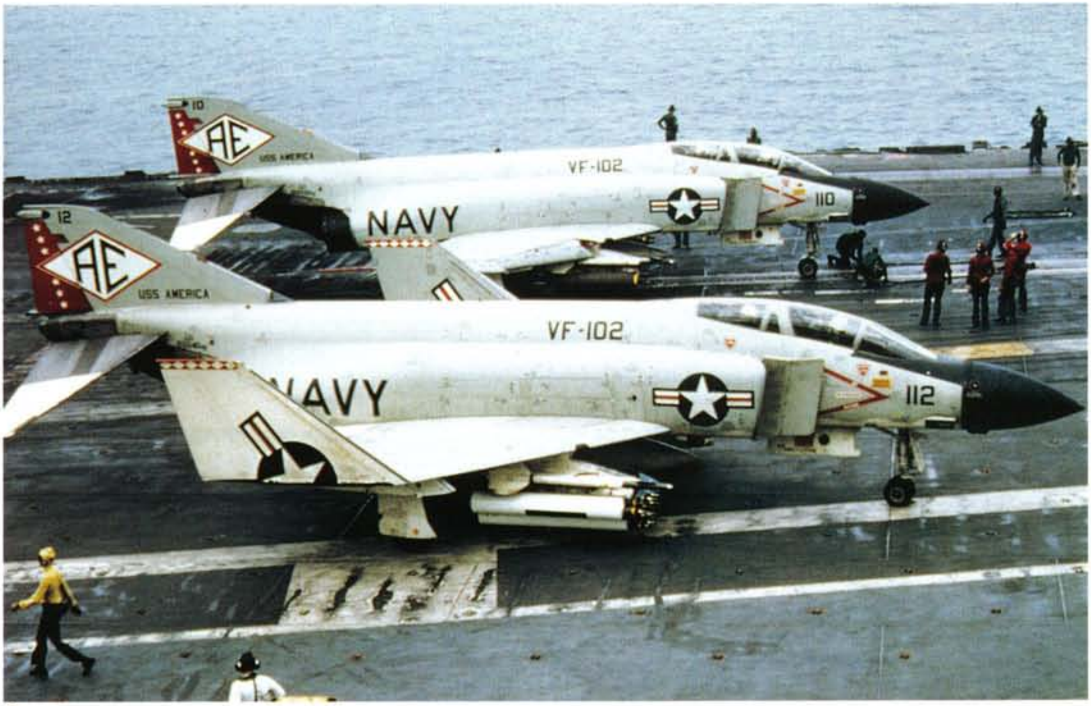
6


NH
10
3000
VF-114
NAVY
410

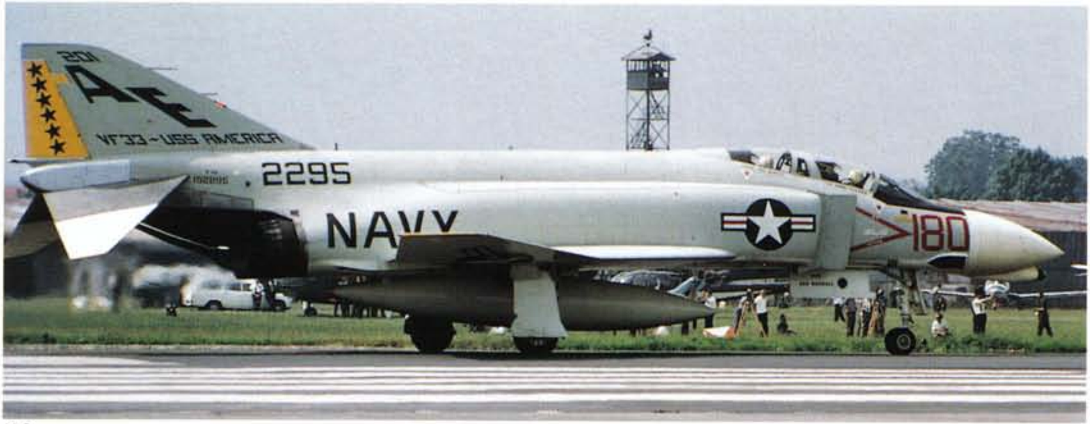
7


USS CORAL SEA
201
NAVY
NL

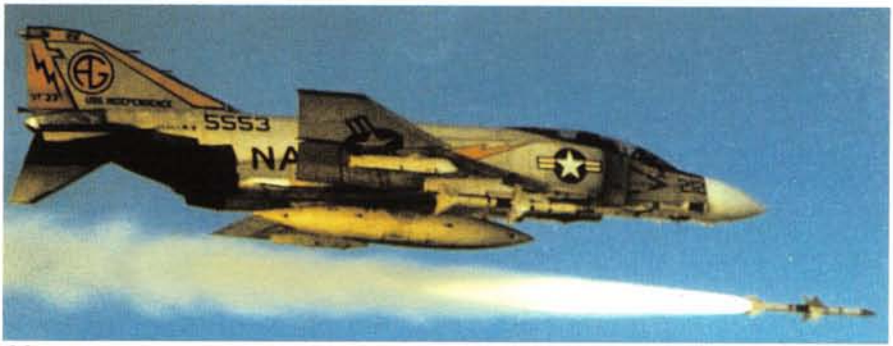
8


10
AE
USS AMERICA
VF-102
NAVY
110
12
AE
USS AMERICA
VF-102
NAVY
112

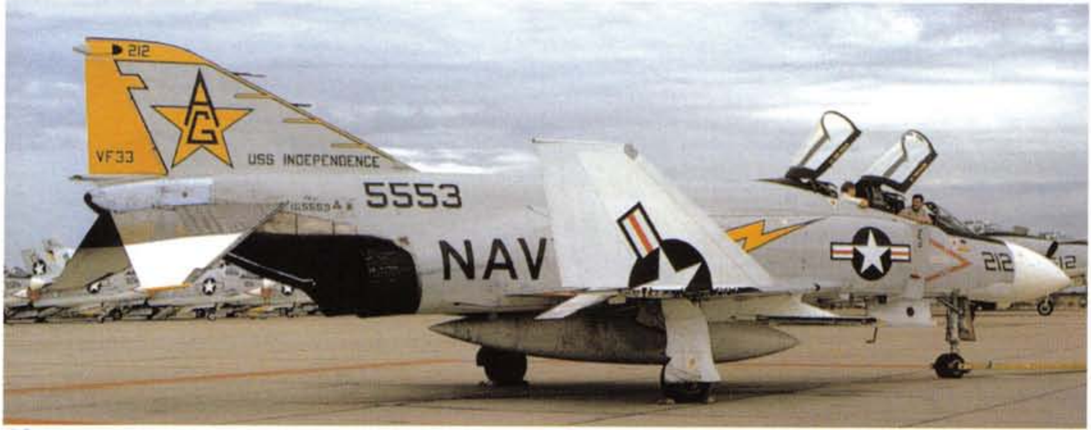
9


201
AE
VF33 ~ USS AMERICA
2295
NAVY
180

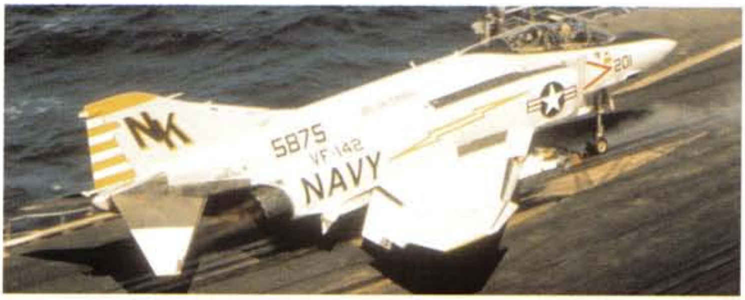
10


AG
USS INDEPENDENCE
5553
NA

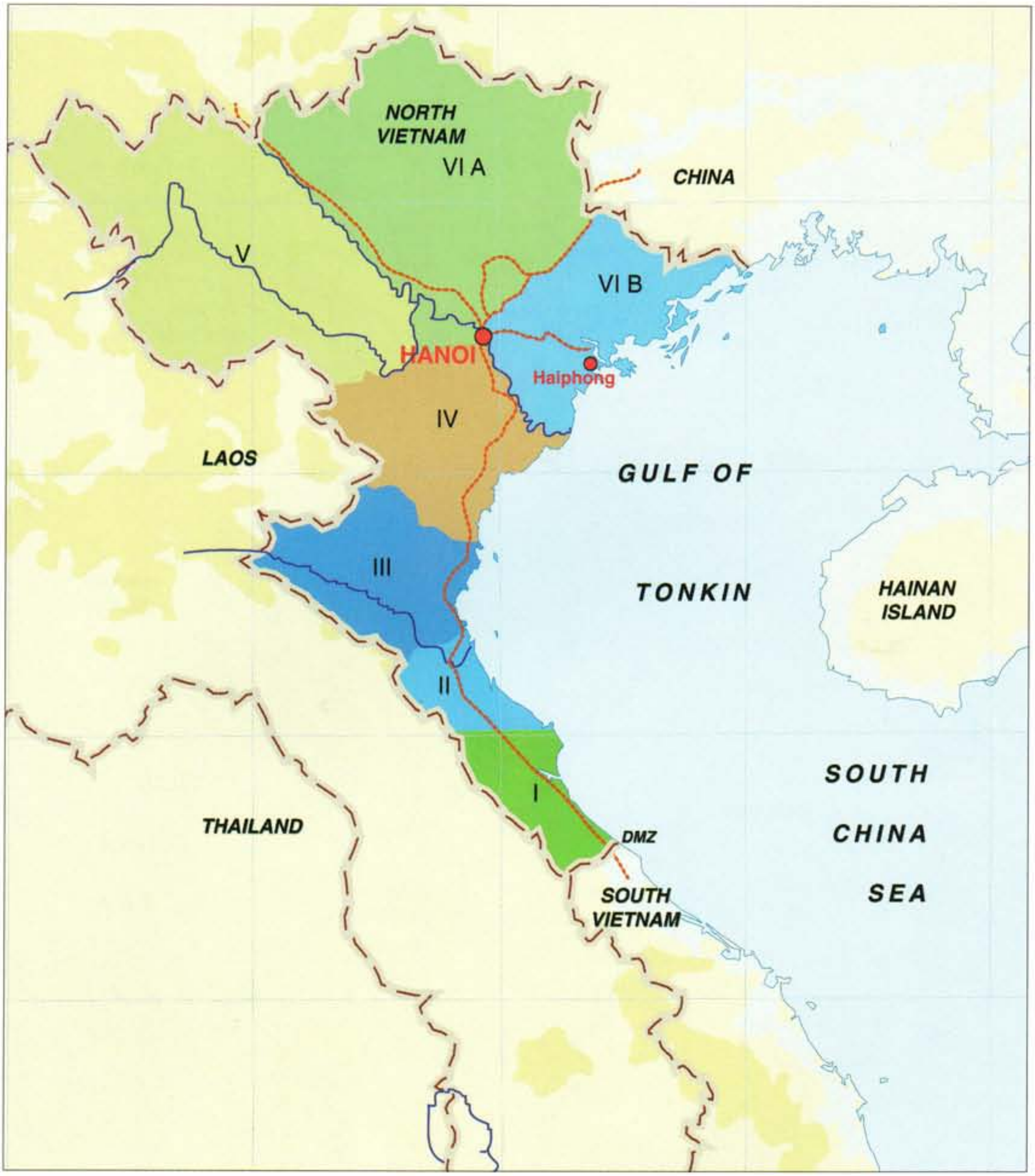
11


212
AG
VF33
USS INDEPENDENCE
5553
NAV
212

12

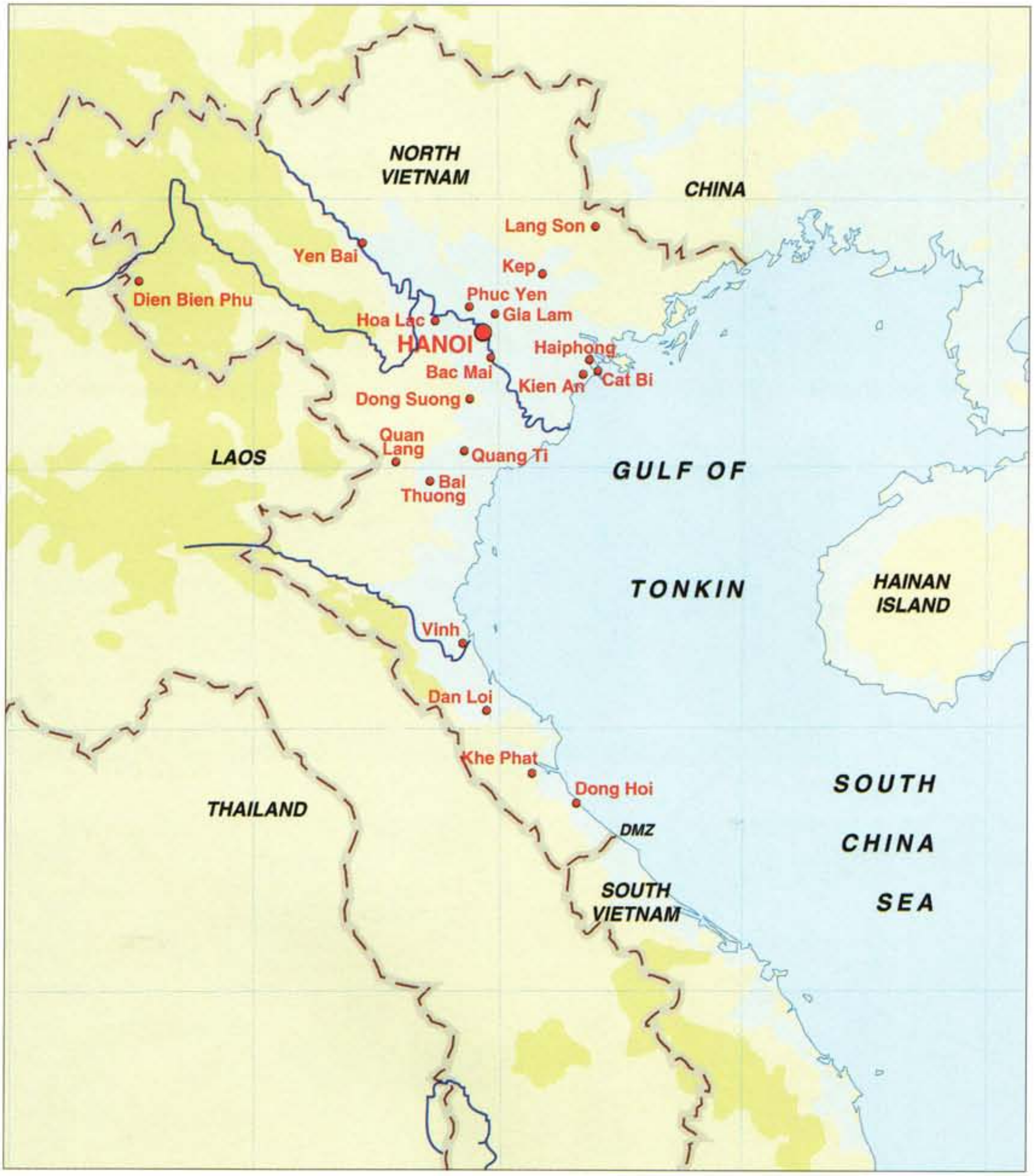

NK
5875
VF-142
NAVY
201

13

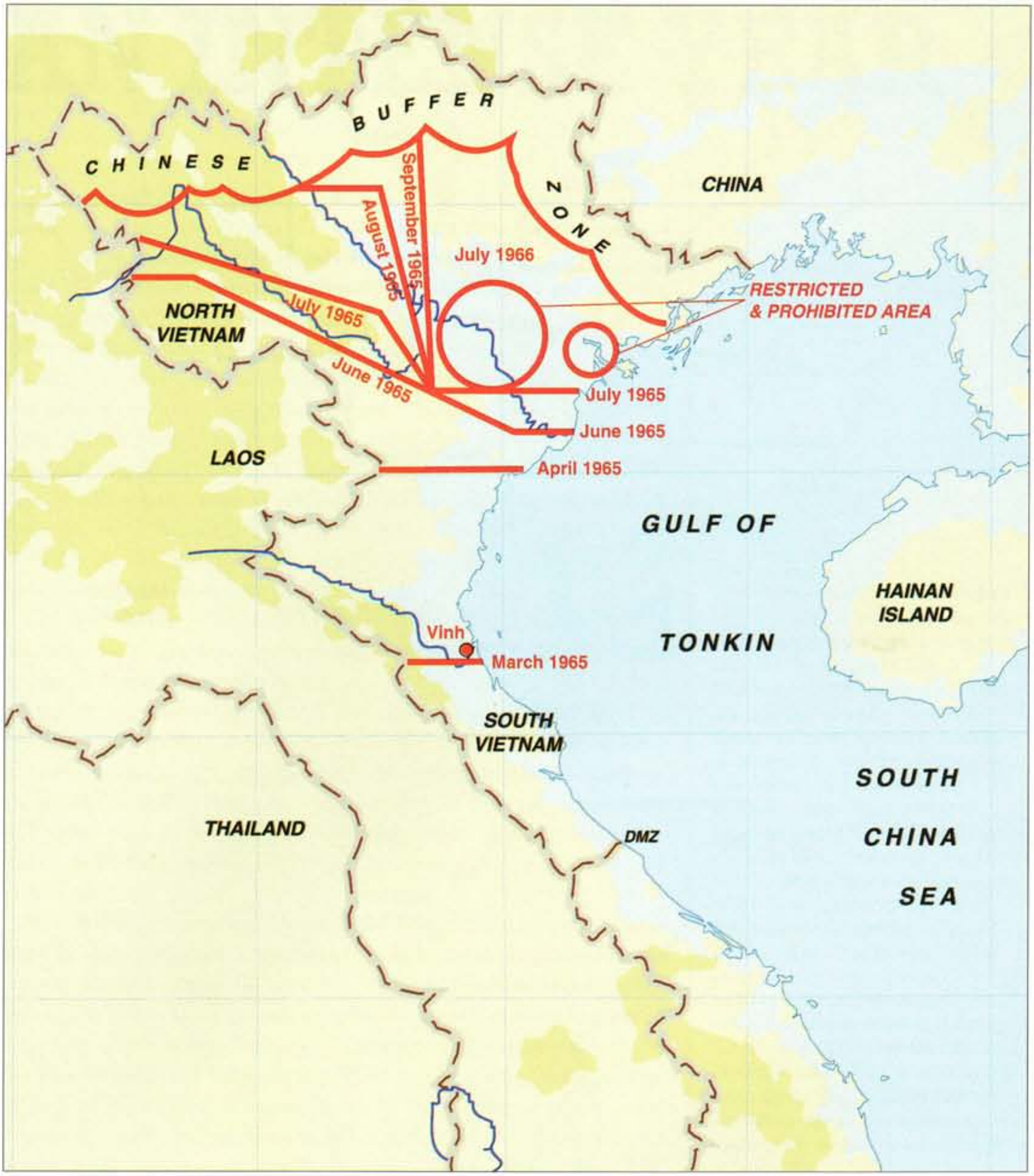

NORTH VIETNAM
VI A
CHINA
V
VI B
HANOI
Haiphong
IV
LAOS
GULF OF
III
TONKIN
HAINAN ISLAND
II
SOUTH
I
THAILAND
DMZ
CHINA
SOUTH VIETNAM
SEA

Map 1

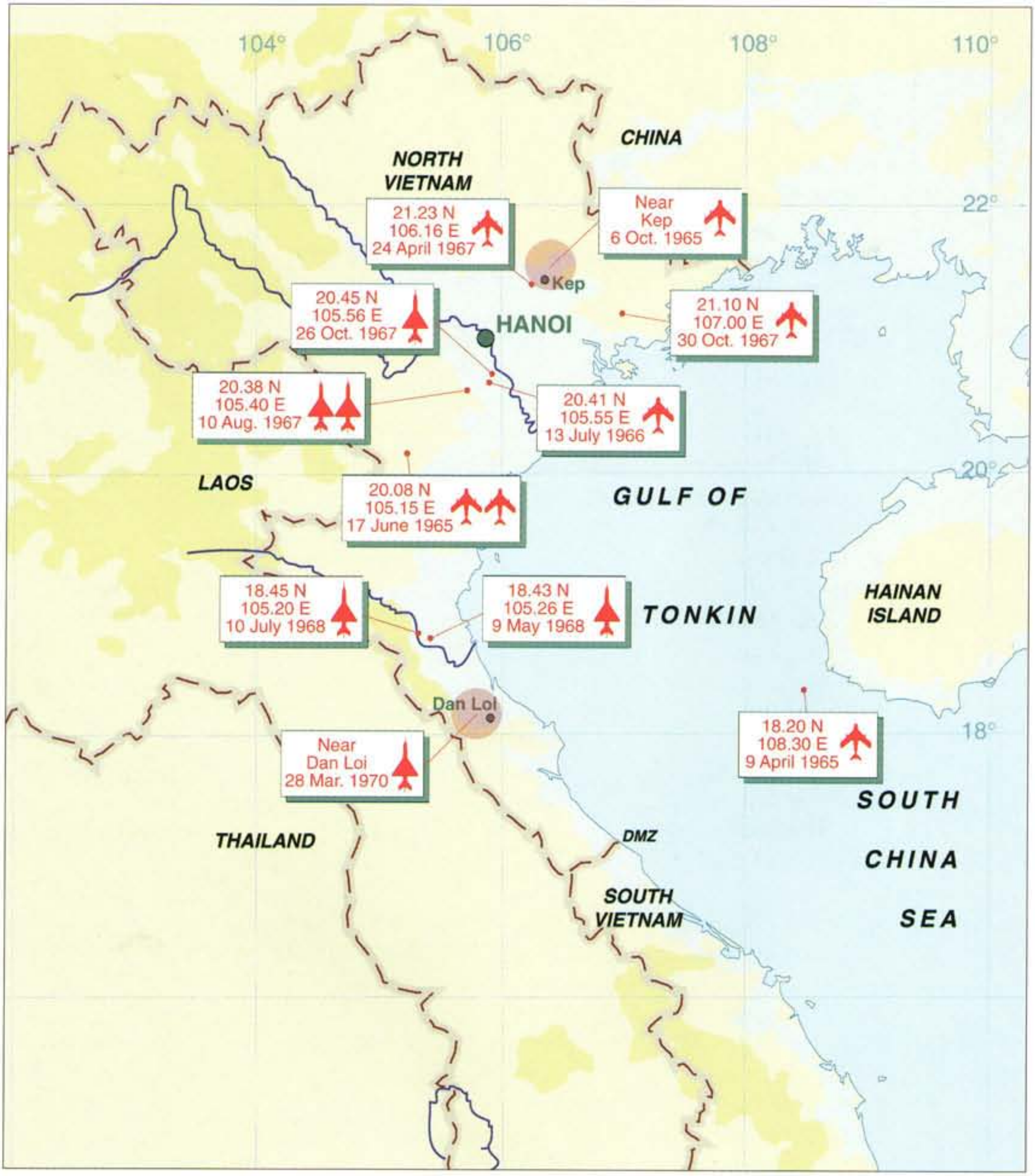
The various geographic regions of North Vietnam were divided into Route Packages, called 'Paks' or 'RPs', and control assigned to a specific service. The Navy controlled operations in Paks II, III, IV and VIA, and the Air Force air operations in Paks I, V and VIB. The two stations from which Navy carriers operated during the war stretched along the length of the Vietnamese coast. *Yankee Station* was located north of the DMZ, and stretched up to Hai Phong. As many as three carriers (part of Task Force 77) would be operating in these waters at any one time. Further south, *Dixie Station* was typically serviced by only one carrier, and was eventually disestablished in August 1966 as more Air Force units moved into neighbouring Thailand and South Vietnam.


NORTH VIETNAM
CHINA
Lang Son
Yen Bai
Kep
Phuc Yen
Gia Lam
Dien Bien Phu
Hoa Lac
HANOI
Haiphong
Bac Mai
Kien An
Cat Bi
Dong Suong
Quan Lang
Quang Ti
LAOS
GULF OF
Bai Thuong
TONKIN
HAINAN ISLAND
Vinh
Dan Loi
Khe Phat
Dong Hoi
SOUTH
CHINA
SEA
THAILAND
DMZ
SOUTH VIETNAM

Map 2
The major VPAF MiG bases are highlighted in this map. Kep, Gia Lam and Phuc Yen were the initial airfields used by the communists, but many more were constructed as the war progressed. MiG bases were off-limits to US fliers for political reasons until March 1967.


CHINESE BUFFER ZONE
CHINA
September 1965
August 1965
July 1966
July 1965
June 1965
RESTRICTED & PROHIBITED AREA
NORTH VIETNAM
July 1965
June 1965
April 1965
LAOS
GULF OF TONKIN
HAINAN ISLAND
Vinh
March 1965
SOUTH VIETNAM
THAILAND
DMZ
SOUTH CHINA SEA

Map 3
Rolling Thunder air operations were focused against North Vietnam. Other missions, such as *Barrel Roll, Steel Tiger* and *Tiger Hound,* were conducted in Laos in order to interdict the supply of provisions and materials from North Vietnam to the Viet Cong. *Rolling Thunder* strikes progressively moved north, eventually covering all of North Vietnam except the protected and restricted areas around Hanoi and Hai Phong, and the 30-mile buffer zone near Communist China.


104°
106°
108°
110°
22°
20°
18°
CHINA
NORTH VIETNAM
21.23 N 106.16 E 24 April 1967
Near Kep 6 Oct. 1965
Kep
20.45 N 105.56 E 26 Oct. 1967
HANOI
21.10 N 107.00 E 30 Oct. 1967
20.38 N 105.40 E 10 Aug. 1967
20.41 N 105.55 E 13 July 1966
LAOS
20.08 N 105.15 E 17 June 1965
GULF OF
TONKIN
HAINAN ISLAND
18.45 N 105.20 E 10 July 1968
18.43 N 105.26 E 9 May 1968
Dan Loi
Near Dan Loi 28 Mar. 1970
18.20 N 108.30 E 9 April 1965
THAILAND
DMZ
SOUTH VIETNAM
SOUTH CHINA SEA

Map 4

This map shows US Navy F-4 MiG kills from 1965 through to 1970, including the Communist Chinese MiG-17 downed by VF-96 on 9 April 1965. The two An-2s downed on 20 December 1966 are not included.

AN INTENSE YEAR

Although by the end of 1966 both the Air Force and the Navy enjoyed a relatively good MiG kill ratio, a more in-depth analysis of combat over Vietnam led to the conclusion that something was amiss. US missiles were performing poorly, and the MiG-21 was scoring a disproportionate number of kills in comparison with the F-4.

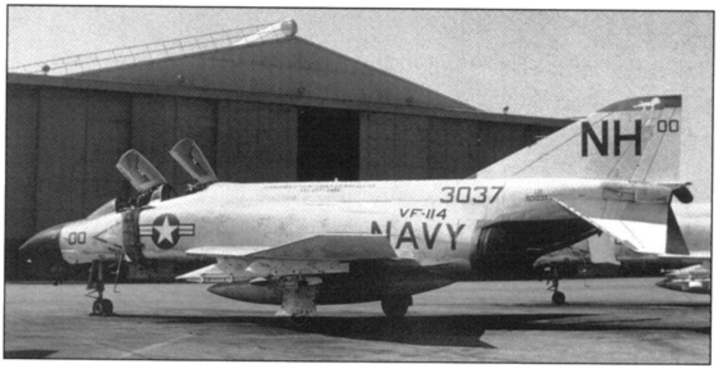
Despite the growing MiG threat, American attacks against VPAF bases remained strictly prohibited. This restriction prompted a scheme implemented by the USAF to entice the MiGs up for a big fight. In January 1967, under the code-name Operation *Bolo*, Air Force F-4Cs from Thailand flew simulated F-105 profiles and successfully lured no fewer than 11 MiGs into a series of engagements. Using both Sidewinders and Sparrows, the Phantom II crews (all from the 8th TFW) downed seven MiG-21s without loss on 2 January, followed by two more four days later through the employment of a similar feint.

This rout of the VPAF MiG-21 force, coupled with unusually foul weather, saw communist 'Fishbeds' refrain from combat until mid-April, when new fighting began in earnest.

Despite the decimation of the MiG-21 unit, the MiG-17s of the 921st and 923rd Fighter Regiments continued to take the fight to the Americans in February and March. Indeed, the 'Fresco' pilots demonstrated a new confidence in combat, routinely trying to get the US fighters to come down and fight closer to the ground, where American missiles were least effective, and where the MiG-17's superior turning qualities could be used to their advantage.

At this time the infamous 'wagon wheel' formation emerged, which saw MiG-17s flying in a circle at low-altitude, where they could offer each other mutual protection. Ground clutter effectively rendered the AIM-7 useless, and the AIM-9's effectiveness was also greatly reduced because of the effects of low-altitude firing on its engagement envelope – at sea level the Sidewinder had a range of only 4000 ft, and a firing cone of only 30 degrees off the bandit's tailpipe. These tactics were complemented shortly thereafter by positioning AAA and SAM defences near the 'wheels' to further hamper American attempts to intercept the MiG-17s.

As the weather lifted in late April, MiG engagements rose dramatically, and some of the fiercest aerial battles of *Rolling Thunder* took place, resulting in the downing of nine MiGs by USAF F-4Cs and F-105Ds and two by Navy F-4Bs. This increased activity, and the MiGs' growing aggressiveness, led the Johnson administration to approve attacks on key VPAF bases, including Kep and Hao Lac.



VF-114 claimed the Navy's first MiG kills of 1967, and this particular F-4B played a major part in securing this success. Crewed by Lt Dennis Wisely and Lt(jg) Gareth Anderson, the jet downed one of two MiG-17s destroyed on 24 April. It is seen here at Miramar in July 1967, shortly after completing the final two months of *Kitty Hawk's* 1966-67 *WestPac* – BuNo 153037 had been assigned to the 'Aardvarks' on 8 April as an attrition replacement. As VF-114's designated CAG aircraft, *Linfield 200* was entitled to wear a traditional multi-coloured marking somewhere on its fuselage. However, the unit restricted its embellishment to additional titling (which reads *COMMANDER ATTACK CARRIER AIR WING ELEVEN*) on the spine above the *USS KITTY HAWK* stencilling. Note the storeless triple ejector rack beneath the port wing of BuNo 153037 (*US Navy*)

Linfield 200's **RIO for the 24 April 1967 MiG-17 shoot down was Lt(jg) Gareth L Anderson of Kane, Pennsylvania. On his first *WestPac*, the young naval aviator had little time to savour his rare MiG kill for he was shot down by a SAM in *Linfield 204* (BuNo 153004) near Hanoi on 19 May. Both Anderson and his pilot, Lt(jg) J C Plumb, ejected safely and were quickly captured (*via Peter Mersky*)**

Linfield 200's **pilot on 24 April 1967 was Lt 'Denny' Wisely, who had already downed an An-2 earlier in the cruise. His MiG kill made him the Navy's first two victory naval aviator, and he would keep this distinction until May 1972. Like Anderson, Wisely was also shot down in May 1967, falling to AAA (in BuNo 153040/NH 213) on the 21st. However, both he and his RIO (fellow 'MiG killer' Ens James W Laing) were rescued (*via Peter Mersky*)**

As would be expected, the attacks on Kep provoked some of the most ferocious aerial engagements experienced by American aircrews to date. Located approximately 37 miles north-east of Hanoi, Kep was one of five major MiG bases in North Vietnam.

On 24 April, jets from the *Kitty Hawk* launched and headed across the Gulf towards Kep. VF-114's Phantom IIs were providing the MiGCAP for the strike, with two of the F-4s being crewed by Lt Charles Southwick and Ens James W Laing (in BuNo 153000/NH 210) and Lt Denny Wisely and Lt(jg) Gareth L Anderson (in BuNo 153037/NH 200).

As the MiGCAP approached Kep, the crews encountered heavy AAA and SAMs, and several of the escorting F-4s were hit by flak, forcing them to return to the carrier. Southwick and Laing also felt a 'thud' at this early stage of the mission, but dismissed it as the impending action neared.

With the bombers in the process of dropping their ordnance, a call came that there were MiGs in-bound down the Red River valley. Southwick, who was now heading back towards the carrier, pulled his Phantom II around and immediately saw several MiG-17s heading straight at him. He called 'tally ho' as the MiGs roared by, and started a horizontal turn.

Southwick refused to play his foes' game by continuing his flat turn, and instead pulled his fighter up into a climbing vertical loop, then dropped down into the 'Fresco' wagon wheel at high speed. He saw one MiG on his right, then another flashed by on his left, exposing its underside as it turned. Southwick then entered the wheel after the MiG. Hearing the Sidewinder growl, he launched an AIM-9D which powered into the MiG's right wing. The communist jet smoked at first, spewing out fuel, then careened towards the ground.

When Southwick had entered the wheel and closed on his target, the wingman of the latter jet gave chase. About that time, Wisely and Anderson joined the fray. Wisely later stated that there were 'MiGs everywhere', and he recalled seeing them chasing an A-4 and an A-6. As he followed his own target, he also noticed that Southwick had a MiG on his tail, and it looked as if it was about to shoot. Wisely shouted 'pull up', and Southwick responded, pulling his F-4 into a left barrel roll. The MiG's missile passed harmlessly by. Wisely then triggered his own missile, which destroyed the MiG-17.

After Southwick rolled out, Laing noticed a warning light in the cockpit, indicating that they were low on fuel. He soon realised that the 'thud' he had felt earlier in the mission was likely to have been shrapnel from an exploding AAA shell. Apparently, the shot had severed fuel lines, and the Phantom II was unable to transfer fuel from its wing tanks, which were still full. With Wisely and Anderson escorting them, the crew of *Linfield 210* headed for the Gulf, where their chances of being rescued were much greater than if they had to eject over land.

Five or so miles out, both engines shut down through fuel exhaustion, and the Phantom II plunged into the water. Both crewmen ejected, and were rescued after just 30 minutes in the water.

The VPAF claimed credit for downing *Linfield 210*, the 923rd Fighter Regiment's Mai Duc Toai, Le Hai, Luu Huy Chao and Hoang Van Ky sharing in the victory

Denny Wisely's MiG kill was significant for the Navy, for he had been involved in the December 1966 engagements with the An-2 'Colts'. With two victories to his name, he was now the leading Navy VPAF killer. Indeed, it would not be until the second major phase of the air war in 1972 that the Navy would see another pilot or RIO with more than one official kill.

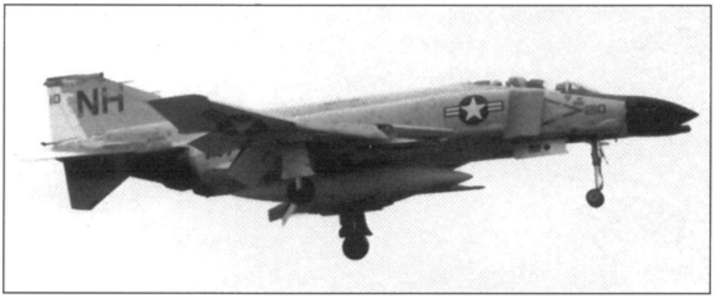
As an indication of the escalation of the air war in the spring of 1967, Wisely, Laing, Southwick and Anderson – flying with different crews – were all shot down in May. Southwick (in BuNo 153001/NH 201) went down near Thanh Hoa on the 14th after his jet had suffered an idle engine stall as a result of ingesting gas from its own Zuni rockets. The damaged Phantom II continued on after the crew had ejected, coming to rest upright on a riverbank – three Alpha strikes were subsequently launched in a futile effort to destroy the aeroplane before it was taken away. Southwick and his RIO, Lt D J Rollins, were made PoWs.

Anderson and his pilot, Lt(jg) J C Plumb, were shot down by a SAM near Hanoi in BuNo 153004/NH 204 on the 19th, and again both crewmen were captured. Finally, on the 21st, Wisely and Laing (in BuNo 153040/NH 213) fell to AAA, although on this occasion both men were rescued. Following the completion of his tour with VF-114, James Laing went on to become an instructor initially at VF-121 (the Pacific Fleet F-4 crew training unit) and then Topgun, specialising in ACM radar operation and RIO training.

Aside from VF-114's 'MiG-killing' successes on 24 April, sister-squadron VF-213 was also 'mixing it up' with VPAF fighters on this day. Towards the end of their flak suppression run north-east of Hanoi, seven F-4Bs encountered heavy SAMs and AAA. One of the Phantom IIs – 'Black Lion 115' – was then jumped by three MiG-17s, the pilot describing his assailants as 'silver MiGs with red star insignia'. The lead MiG fired eight bursts 'in runs from all over the clock, above, level and below'. The F-4 pilot in turn tried to engage, but his missiles failed, so he turned with the MiGs until he was able to break free and head for the carrier.

April and May 1967 saw the highest number of all-service MiG-kills of the entire *Rolling Thunder* campaign. A total of 38 MiGs was claimed to have been destroyed (11 in April and 27 in May), and such a tally would not be seen again until May 1972, when 27 kills were claimed during the initial *Linebacker* operations. The Air Force were credited with 30 of the 38 victories, these being shared between F-4C and F-105D crews. Of the eight kills attributed to Navy jets, five were claimed by F-8C/Es, two by the F-4B and one by an A-4C.

The successes of April and May were followed by a noticeable downturn in MiG activity, reduced levels of AAA and fewer SAM



The second aircraft involved in the 24 April 1967 MiG clash was *Linfield 210*, alias BuNo 153000. The aircraft is seen here on short finals to NAS Atsugi on Saturday, 19 November 1966, CVW-11 sending 36 of its aircraft on a shore run to the naval air station on the outskirts of Tokyo for a 48-hour R&R break. By the time CVA-63's *WestPac* had come to an end six months later, six of these aircraft had been lost in combat and one written off in an operational accident. Amongst the former was BuNo 153000, which suffered serious AAA damage on its 'MiG killing' mission on 24 April. Its crew, Lt Charles Southwick and Ens James W Laing, coaxed the big fighter back out to sea, but with no hydraulics, they could not lower the undercarriage for landing and were forced to eject. Note the fin-top AN/APR-30 Radar Homing and Warning System (RHAW) antennas fitted to this jet (*via A Romano*)

The next MiG kills for 1967 were claimed on 10 August when two MiG-21s were downed by a pair of F-4Bs from *Constellation's* VF-142. One of the aircraft involved in this action was *Dakota 210* (alias BuNo 150431), which is seen here at Da Nang following a diversionary landing. This shot was taken prior to the jet 'bagging' its MiG (*US Navy*)

NK
210
0431
NAVY

attacks. Many observers believe that this was caused by the failure of the VPAF's supply system to keep up with the increased operational tempo. This inactivity lasted through June and July, for many MiGs had fled to China to regroup due to the persistent attacks on the southern-most air bases. Those fighters that remained in the north had taken up temporary residence at Phuc Yen and Gia Lam, which were still off limits to US jets.

Indeed, there were only five MiG kills in June, all of which fell to either USAF F-4C/Ds or F-105Ds. On 21 July a further four MiGs were claimed by F-8s (three by VF-24 and one by VF-211) off the *Bon Homme Richard*. By the end of that month only seven MiG-21s and twenty-eight MiG-17s remained in North Vietnam. However, in early August the MiGs returned, and F-4B crews began to 'mix it up' in Paks IV and VI.

TWO TO VF-142

At 1145 hrs on 10 August 1967, two F-4Bs from VF-142 launched from the *Constellation* to provide BARCAP for a large two-carrier Alpha strike heading for the Phu Ly transhipment point. The crews involved were Lt Guy Freeborn and Lt(jg) Robert Elliot (on only his ninth combat mission) in F-4B BuNo 152247/NK 202 (formerly an F-4G that had been reconverted back to B-model specification following an experimental deployment with VF-213 in 1965-66), and Lt Cdrs Robert C Davis and Gayle O Elie in F-4B BuNo 150431/NK 210.

The following account of this engagement comes from Lt Freeborn;

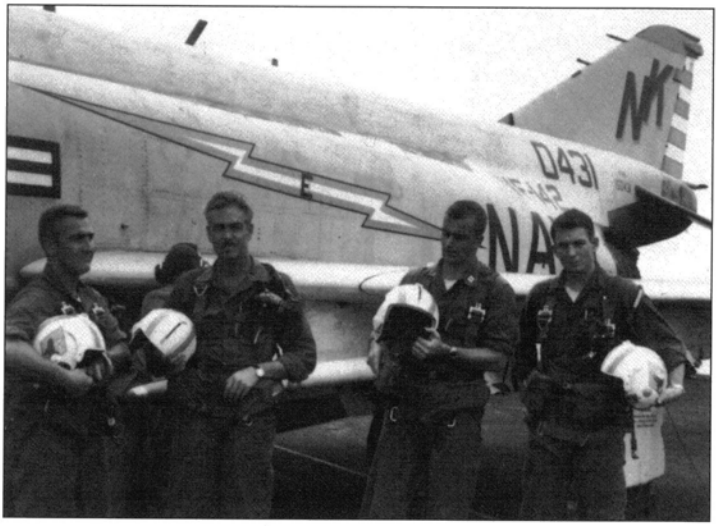
'I had been an F-4B Tactics Instructor with VF-121 for over two years, and the Training Officer in VF-142 prior to this cruise. Squadron activity in 1967 was, "Fly, eat, drink, play cards, man the Alert 5 watch, and curse the politicians for putting us in a war they wouldn't let us win.'

After tanking, the two Phantom IIs reached their CAP station just west of Nam Dinh and began a left orbit pattern at approximately 22,000 ft.

'The engagement was planned by us based on the environment – i.e. positive radar or radio control and thin cloud layers at 22,000 ft. We were BARCAP for the strike group, and held station just below the cloud layer, instead of the normal 15,000-18,000 ft, for the surprise element, which worked just as we had planned.'

As Guy Freeborn mentioned, the Phantom II crews were trying a new tactic on this mission that emphasised greater radar/radio control over BARCAP forces. Moreover, by taking advantage of the cloud layer, the BARCAP hoped to catch the MiGs as they broke through the clouds – VPAF fighters typically attacked from above the cloud under GCI control, and VF-142 hoped to intercept them as they dived down after the Navy fighter-bombers. The tactic worked well, and on this occasion the BARCAP encountered MiG-21s, which the Navy had rarely seen up to this point in the war, as the VPAF preferred to use to MiG-17s to oppose the northern Route Packs. Freeborn again;

'We were very familiar with the MiG-21's capabilities and tactics. We just hadn't seen many. They were mainly into "hitting the strike elements and running for home", with not much dogfighting capability. The feedback from USAF crews who had met the MiG-21 the previous year mostly confirmed this. They seemed to like the three-aeroplane formation, with one up front and two trailing the lead aircraft. They also liked to attack in multiple passes.'



Back in more familiar surroundings on the steel deck of the 'Connie', BuNo 150431 serves as a backdrop for a group shot of the pilots and RIOs involved in the 10 August 1967 'MiG killing' mission. *Dakota 210's* crew, Lt Cdrs 'Swede' Elie (RIO) and Robert Davis, are standing closest to the fuselage, while further along the wing are Lt Guy Freeborn (pilot) and Lt(jg) Robert Elliot. The latter pair used *Dakota 202* (BuNo 152247) to claim their MiG-21 (*via Angelo Romano*)

As the *Constellation* strike group was exiting the target area, MiGs appeared, but they had yet to be seen by the Phantom II crews, despite their attempts to locate them. Finally, the communist fighters were spotted about 15 miles astern, and as the Phantom IIs turned left to engage, Freeborn noticed two objects directly above them. Coming through the clouds were two silver MiG-21s, heading north at 22,000 ft, and about 400 knots. As luck would have it, the MiGs did not see the F-4Bs.

The Phantom IIs moved into position behind the MiGs, ready for the shot. Davis and Elie took the MiG on the right, but when they triggered two Sparrows, they refused to fire. Davis then switched to Sidewinder and shot off a missile.

At that same time, Freeborn loosed off a Sidewinder that tracked and exploded just left of the MiG, sending it down streaming smoke and fuel. Davis's first AIM-9 missed, and his second went ballistic. He quickly executed a high yo-yo manoeuvre and settled in behind the MiG Freeborn had just 'winged', which was now at 14,000 ft and in a left bank. Davis fired a third and then a fourth Sidewinder, destroying the MiG.

Freeborn, now agitated that Davis had 'plunked' his already damaged MiG (his mission tape later revealed the pilot exclaiming 'The bastard shot my MiG!' to his RIO seconds after the enemy fighter exploded), turned on the latter's original target, which was ahead and about 1000 ft below him. Getting a good heat tone in his headset, he squeezed off a Sidewinder, but it misfired and remained on the rail. He then quickly shot off a second missile, which tracked, wiggled for a moment, then ploughed into the MiG, creating a huge fireball.

These two kills represented the first Navy Phantom II victories against the new MiG-21 (VF-162's Cdr Dick Bellinger had been the first naval aviator to 'bag' a 'Fishbed', in his F-8E, on 9 October 1966). Although both were the result of nearly textbook engagements, the most disturbing aspect was that it took nine missiles to achieve the kills. Thus, while American crews were finding the upper hand tactically, poor weapons reliability was robbing them of the opportunity for a quick kill, and placing them in jeopardy in extended dogfights. Guy Freeborn remembers;

'My choice of missile for close-in fighting was always the Sidewinder. Bob Davis and "Swede" Elie fired two Sparrows with no good guidance. Their kill was also Sidewinder. Reliability of the missiles was a major issue then. The gun pod didn't work well and was too limited, so nobody wanted it. What we really wanted were built-in guns like those fitted to the Air Force's F-4Es.'

From January to the end of July 1967, Air Force and Navy units claimed a total of 55 MiGs shot down, with a further 30 destroyed on the ground. Of these kills, 12 were credited to the Navy, nine of which were

Recovery completed, the bow area of CVA-64 is full of recently-landed Phantom IIs and A-4s that will soon be re-spotted by the deck handlers. Most of the F-4s will be towed aft to the stern, which has traditionally been 'fighter country' aboard US Navy carriers. Chained down in the centre row of jets, sandwiched between two F-4Bs from VF-143, is VF-142's BuNo 152247 – Freeborn and Elliot's 'MiG killing' Phantom II. Toting an AGM-45A Shrike anti-radiation missile secured to its starboard wing hardpoint, the A-4C in the foreground has just returned from an uneventful *Iron Hand* SAM suppression sortie (*via Angelo Romano*)

scored using the new AIM-9D. Despite these heavy losses, the MiG force returned in strength during the remaining five months of 1967.

And through the employment of new harassing tactics during the course of September, the VPAF succeeded in its aim of drastically increasing the number of 'forced jettisons' of bombs from US aircraft prior to them reaching their intended targets. So heavy were the MiG attacks that President Johnson finally authorised strikes to be flown against the northern air base at Phuc Yen, leaving only the facility at Hanoi International Airport untouched.

These attacks took place on 24-25 October, and resulted in the destruction of a single MiG-21 in the air and another eight on the ground. Heavy VPAF fighter activity also led to the employment of dedicated MiGCAP sorties, where F-4Bs patrolled in search of fighters, rather than providing escort during TARCAP missions.

MiGCAP was employed by the F-4 units on the 'Connie' during the vessel's last two line periods of its 1967 *WestPac*. According to VF-143's end of cruise records, 'crews enthusiastically welcomed the advent of a fighter-sweep type tactic, referenced to as a MiGCAP, directed against an increasingly aggressive enemy Air Force'. The report continued;

'With increased MiG activity during the months of September, October and November, it was evident that TARCAP was insufficient to counter the threat. The TARCAP were on strike frequency, and used solely to protect the striking forces. This frequency, plus the "Bandit" calls on guard, made it virtually impossible for any close control to counter the MiG activity. Hence the idea of a MiGCAP was generated. Those aircraft were a distinct separate unit, flown in one or two sections, under the close control of a surface ship utilising a frequency other than the strike frequency.'

MiGCAPs during CVW-14's cruise were controlled by the northern SAR ships because of their advanced ECM and interrogation gear.

MiGCAP stations were established to provide the maximum coverage in areas most likely to encounter MiGs. Because of the frequency of MiG orbital patterns, two permanent MiGCAP stations were established and referred to as stations 'A' and 'B'. CVW-14's F-4s, operating from these stations, destroyed three MiG-21s and one MiG-17 during the latter half of 1967. VF-143's report also described in some detail how these MiGCAPs operated;

'The MiGCAP briefed with the main strike force, effected a rendezvous overhead with the tanker, refuelled approximately 2500 to 3000 pounds, and then departed separately for pre-briefed CAP stations. After the rendezvous on departure frequency, the MiGCAP switched to Strike Control, checked their SIF (Selective Identification Facility) gear and then checked in with PIRAZ Control.

'They then shifted frequency to Primary BARCAP Control, giving the controlling ship their state, weapon and armament status, and the station where they would hold feet dry. The controlling ship would then have the MiGCAP shift to a primary or secondary frequency different from the strike frequencies, thus allowing them to give full control to the fighters without disturbing the strike network. This close control was the first positive movement to make use of the full capabilities of the F-4. It was felt that with MiGCAP on their station, along with TARCAP near the strike force, the MiG threat to the force was minimised to a low degree.'

MiGCAP demonstrated to the VPAF that the US Navy was taking the threat posed by its MiGs seriously, and proved its worth during the late October engagements.

MiGCAP SUCCESS

On 25 October *Constellation* and CVW-14 returned to *Yankee Station* for their final line period of the cruise. Their arrival coincided with a period of poor weather, which hampered flying operations. However, the following day dawned clear, and a strike was launched against the army barracks at Van Dien, in Pak IV.

At a point between Hanoi and Thanh Hoa, a section of orbiting MiGCAP F-4Bs from VF-143 were vectored by *Harbormaster* (the ship-based *PIRAZ* GCI in the northern Gulf of Tonkin) towards a group of contacts believed to be MiGs. As the Phantom IIs sped towards their prey, clearance was given for the crews to fire without them having first obtained a visual identification of their targets.

Fortunately, the section leader's radar failed just as he was about to shoot, and his wingman's AIM-7 also refused to launch as he achieved missile lock. The wingman's Sparrow and Sidewinder shots also failed to acquire. As the formations merged, and to the horror of the two crews, it became clear that their 'MiGs' were actually other F-4Bs from VF-143!

A few moments later, the intercepting crews were directed to yet another contact believed to be MiGs. After receiving their vector, the lead

Posing for the cameras at Tan Son Nhut AFB, in South Vietnam, 24 hours after downing their MiGs, Lt Cdr Davis and Lt Freeborn employ the traditional 'hand talk' associated with fighter pilots reliving their experiences out of the cockpit. Both crews had been flown ashore from CVA-64 within hours of scoring their MiG-21 kills in order to brief the Press on how they had achieved their success. A photo session was also conducted before the 'MiG killers' returned to the 'Connie' to resume fighting the war. Both men are wearing baseball caps and shirts adorned with VF-142's 'Ghostrider' emblem (*via Peter Mersky*)

Hook down and 'in the groove' for landing, *Dakota 213* closes on the deck of CVA-64. During its 1967 *WestPac*, VF-142 logged most of its flight time providing CVW-14's strike aircraft with BARCAP, TARCAP and MiGCAP protection, as well as escorting RA-5Cs on photo-recce missions (*US Navy*)

USS CONSTELLATION
THE HEAD DOG
301
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A gruelling *WestPac* behind them, pilots and RIOs from VF-143 pose in front of the CO's jet on the eve of the 'Connie' returning to NAS North Island on 4 December 1967. All 11 of these men completed more than 200 combat missions during the course of the deployment. Standing at the extreme right is RIO Lt James Souder, who participated in the MiG-killing mission of 26 October 1967. Indeed, if his aircraft had not been plagued by intermittent radar and weapons system failure, Souder and his pilot, Cdr D K Grosshuesch (the unit CO, dubbed *THE HEAD DOG* on the canopy rail of *Tap Room 301*), would surely have downed a second MiG-21 to add to the 'Fishbed' destroyed by Lt(jg)s Robert Hickey and Jeremy Morris. VF-143, along with sister-squadron VF-142, had seen much action during the course of 'Connie's' 1967 *WestPac*, and although four MiGs had been downed, and hundreds of sorties completed, both units had paid a heavy price for this success. VF-143 had lost its CO, Cdr W P Lawrence (along with RIO Lt(jg) J W Bailey), to AAA on 28 June, while VF-142 had seen four of its jets destroyed in action. Fortunately for the 'Pukin' Dogs', its downed crew survived as PoWs, although VF-142 had had two naval aviators killed (*via Peter Mersky*)

section pilots, Cdr D K Grosshuesch and Lt(jg) Robert P Hickey Jr, conducted a visual search for the MiGs, while their RIOs, Lt James B Souder and Lt(jg) Jeremy G Morris respectively, focused on their radars. Souder's scope became inoperative, and Morris took over the intercept, directing his pilot (in BuNo 149411/NK 311) into a firing position. Hickey manoeuvred and fired an AIM-9D, which went ballistic and missed.

Meanwhile, Souder's radar had come back on line, and he immediately resumed control of the intercept, locking up the bandit and vectoring the section to a position on the MiG's six o'clock where the Phantom IIs could use their Sparrow IIIs. Although Grosshuesch could now visually identify the bandit as a MiG-21, he was powerless to shoot it down as his weapons system had now malfunctioned, so he ordered his wingman to fire. Hickey then engaged, firing an AIM-7 which tracked then struck the MiG's port wing. The 'Blue Bandit' pitched up and entered a flat spin.

Both Hickey and Morris received a Silver Star for their efforts, and Hickey went on to become an admiral – he was also bestowed with an award for gallantry from the Republic of South Vietnam. James Souder, who was later promoted to lieutenant commander, was shot down (along with his pilot, Lt Cdr A J Molinare) in F-4J BuNo 153025 of VF-51 on 27 April 1972 by an R-3S 'Atoll' that had been fired from a 921st Fighter Regiment MiG-21, flown by Hoang Quoc Dung.

On 29 October, a section of *PIRAZ*-controlled F-4Bs from VF-143 were vectored from their BARCAP station to intercept a MiG-21 some 25 miles south-east of Hanoi. The Phantom II intercepted the MiG and fired an AIM-7E at a distance of four miles. The missile exploded harmlessly about one-and-a-half miles short of the target, and the MiG executed a rapid 'split-S', before heading to Hanoi on the deck. The Phantom IIs returned safely to their carrier.

The next day VF-142's Lt Cdr Eugene P Lund and Lt(jg) James R Borst were flying MiGCAP in another of the unit's ex-F-4Gs (BuNo 150629). Working in the northern patrol station north-west of Hai Phong, the transcript of what happened next comes from 'Geno' Lund's debrief tape;

'We were on the northern MiGCAP station, which is over the ridge north-west of Hai Phong. We went "feet dry" just west of Cam Pha at 270 degrees at 18,000 ft, and we tracked down the northern ridge. About abeam of Hai Phong we got our first "Bandits" call, not from *Harbormaster*, but on *Guard* frequency. About a minute later *Harbormaster* came up and said he had an "unknown" – not a bogie – at 270 degrees and about 50 miles.

'Shortly afterwards he called it a bogie and commenced a vector from 270 degrees to 330 degrees. Shortly after that he confirmed that we were cleared to fire on the bogie, which was now at 353.60 degrees. He called it at "angels ten", and I suggested that it was climbing. He then said that there appeared to be a pair of bogies, and continued to give us vectors. Things got down to about ten miles, and we had got a lock-up on our radar at about fifteen miles. It appeared to be two bogies, from the scope. I more or less neglected any other vectors from *Harbormaster*, and we drove on in.

'At three to four miles I already had it in range, and I got a tally-ho (visual sighting) on *four* MiG-17s flying a finger-four formation in two sections – one section which we were locked onto, and another about 2000-3000 ft astern, all at about 18,000 ft. My range was about mid-range (for the AIM-7), and the missile (AIM-7) commenced to guide absolutely beautifully and impacted on the number two MiG, who was on the left wing of number one. It hit just aft of the cockpit, and he blew up and entered a flat spin. I never saw a 'chute ("Biff" Borst added later in the debrief, "Geno said 'We nailed it', and I looked out and saw a MiG-17 with its tail on fire spinning into the ground").

'At that juncture the second section broke left and the first section broke right. I came up in a high yo-yo to the right. My wingman (Lt(jg) Ron C Ludlow, with Lt(jg) Bruce L Hardison as his RIO, in BuNo 150629) was on my right, and he crossed over. I came back down and committed towards the second section, with my wingman hanging in there. A couple of times when I lost sight of them, he was able to take them on a lot better than I was. They appeared to be pretty aggressive, but I don't think they fired anything at us. I certainly didn't see any guns or missiles.

'Shortly after a couple of high-g turns (with the MiG leader), I think I picked up one section of them dead ahead (two aircraft circling at 5000 ft), slightly down at (estimated) three to four miles. I told James Borst to "go boresight", which he did and he locked up immediately at about three miles. The dot was in the centre (of his scope), and they were above mid-range – about a mile or so – so I fired again.

'The missile (AIM-7E) left the launcher, and about 100 to 200 ft from the aeroplane it exploded and broke up into all kinds of pieces. I felt a jarring sensation in

Lt(jg)s Bob Hickey and Jeremy Morris enjoy their first breaths of sea air following a successful 'MiG killing' mission on 26 October 1967. Hickey and Morris were the only 'all-nugget' (first tour naval aviators) crew to down a MiG during *Rolling Thunder*. Both men received the Silver Star for their success on this mission (*via Peter Mersky*)

LCDR GENE SHIFLETT

JET
DANGER
INTAKE
RESCUE

Visibly elated, Lt(jg) Hickey carefully climbs down from the cockpit of his Phantom II, secure in the knowledge that he has just joined the elite band of US Navy 'MiG killers' (*US Navy*)

the aeroplane – I didn't know if it was jet wash or not. Apparently the right engine had stalled, and I didn't know it.

'From that time on the aeroplane was sluggish. I'd gone into full burner on both engines and performed another high yo-yo to get back on (the MiG). I zipped past one, canopy to canopy, at about 20 ft, and this one I determined to be a camouflaged, olive drab MiG-17. I didn't get a shot at him because he was head-on. I almost got a shot on one more run through. I picked him up again dead ahead at about three miles, but I had about 80 degrees (of turn) to go to get on his tail. I was coming down at him at 30 degrees down, but I couldn't get a "growl" on my Sidewinder because of the aspect. It was a good Sidewinder, but we couldn't get a lock-up on him.

'We met a couple more times, and that's when I looked down and figured out why the jet was so sluggish. The right engine was at idle, and the TOT (Turbine Outlet Temperature) was about 300 degrees, with fuel flow at about 500 lbs, although the throttle was at full afterburner.

'I figured I had a stall, so I pulled it back to idle and started moving the throttle up to 70 to 80 per cent, but I got a heavy rumble in the aeroplane and the rpm dropped off, so I figured I had a fire in the right engine. Utility pressure was down about 1200 lbs, so I figured I had taken a hit from the fire or from the engine itself, and I had better get out of there, so I put full afterburner on the left engine.

'Unfortunately, my wingman's radar malfunctioned, so he could not fire an AIM-7, and since he was a good wingman, supporting me, he was unable to position himself for a Sidewinder shot.

'My wingman had reported that the three remaining MiGs had descended to the south-east towards Phuc Yen. We passed Kep airfield and still had three bogies ahead of us at about ten miles, but they descended in a south-easterly direction. I wanted to get out as quickly as I could, as I wasn't sure what else was going to happen to the aeroplane.'

As Lt Cdr Lund proceeded out at 400 kts and 18,000 ft, his wingman gave BuNo 150629 a thorough look-over, and reported hydraulic fluid all over the underside of the Phantom II. This confirmed his cockpit readings – zero hydraulic pressure, a speed brake warning light and 'the full utility failure routine'. On most Navy F-4s, the hydraulics powered around 27 crucial systems, ranging from the aileron power controls to the chaff dispenser door. 'Geno' Lund continues;

'I came out of burner, started heading south and called for a tanker. I had about 6500 lbs of fuel – barely enough to make it, but I could take another 1000 lbs. Then I realised I couldn't stick my probe out, and couldn't have tanked if I had wanted to. I determined that I could make the ship with about 3500 lbs, going 80 miles out, single-engined at about 300 kts.

The highs and lows of aerial combat. The victorious Lt(jg)s Morris and Hickey talk through the mission with the nearly victorious Cdr Grosshuesch and Lt Souder in VF-143's ready room. The latter pair were robbed of success by equipment failure (*via Peter Mersky*)

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The final MiG kill of CVW-14's lively *WestPac* in 1967 was claimed by VF-142's Lt(jg) 'Biff' Borst (RIO) and Lt Cdr 'Geno' Lund on 30 October. They failed to make it back to the the 'Connie' under their own steam, however, as their F-4B was critically damaged during the encounter with the MiG-17 when a recently-fired AIM-7E prematurely exploded just in front of their Phantom II (*via Peter Davies*)

'My wingman looked me over again and reported several holes in my starboard forward Sparrow missile well. He didn't say whether or not they had been caused by cannon fire – they seemed to be ragged holes, which could indicate they came either from the missile motor or fire from the missile as it exploded back down the aeroplane.

'I called the ship and requested a straight-in approach. I'd "dirty up" at about five miles, and I would need assistance after the arresting gear since I wouldn't have any brakes. At eight miles from the ship I attempted to lower the landing gear. Nothing. I pulled both the gear and flap circuit breakers, pulled the gear handle out, and the indicator remained "Up, up, up". My wingman checked, and the doors hadn't even cracked open.'

Repeated attempts and recourse to the emergency pneumatic flap handle failed, suggesting holes in the pneumatic lines also, although the gauge showed 3000 psi. The pair were advised to eject. Fuel was down to 600 lbs, and at one mile from the ship, at 5000 ft;

'Biff and I went through pre-ejection. We lowered our seats, knee-pads off, sat flat in the seat, rudder pedals fully forward, visors down. Biff went first, and I watched him in the rear view mirror. I then pulled the handle and got quite a jolt – a definite shock, then further jolts from the drogue 'chute. I could see a big splash in the water where the aeroplane had gone in.'

Removing his face mask, 'Geno' decided to wait until he was closer to the water before dropping his seat bucket, and he then fell among the parachute lines. Looking up, he saw 'Connie's' rescue helicopter above him. Both men survived the experience unharmed and fought on, although 'Biff' Borst was later killed in an ACM accident flying an A-7 Corsair II after he had earned his pilot's wings and transferred to the attack community.

PHANTOM IIs DOWN

In November, renewed US strikes against the MiG bases – especially Phuc Yen – again sent many of the VPAF fighters into neighbouring China seeking refuge, and by month's-end only four MiG-21s and twelve MiG-17s were reportedly still in-country. Despite being seemingly 'on the ropes', the VPAF struck back hard on the 19th when a pair of Phantom IIs were downed by MiG-17s from the 923rd Fighter Regiment as they were vectored in to attack jets detected near Hai Phong's Kien An airfield.

The F-4Bs (BuNos 150997/NL 110 and 152304/NL 115), both from VF-151 off the *Coral Sea*, were jumped by unseen MiG-17s flown by Le Hai and Nguyen Dinh Phuc just as the engagement began, and were downed by missiles – the VPAF also erroneously claimed a third Navy Phantom II destroyed on this day. Lt Cdr C D Clower and Lt(jg) W O Estes (in NL 110) and Lt(jg)s J E Teague and T G Stier (in NL 115) all became PoWs, and Teague later died in captivity.

1967 ended on a heavy note, with fighter activity at a high and US Air Forces faced with a more aggressive and more successful MiG-17 and MiG-21 pilot cadre. Moreover, it had become evident that the North Vietnamese GCI units had improved as well, for VPAF controllers were now able to co-ordinate two pairs of MiG-21s, and were starting to integrate MiG-17s with the 'Fishbeds'.

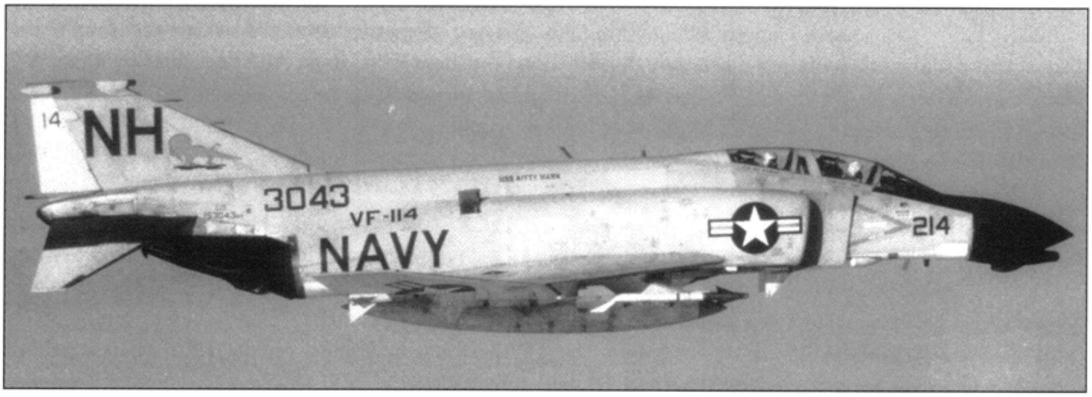
THE END OF THE BEGINNING

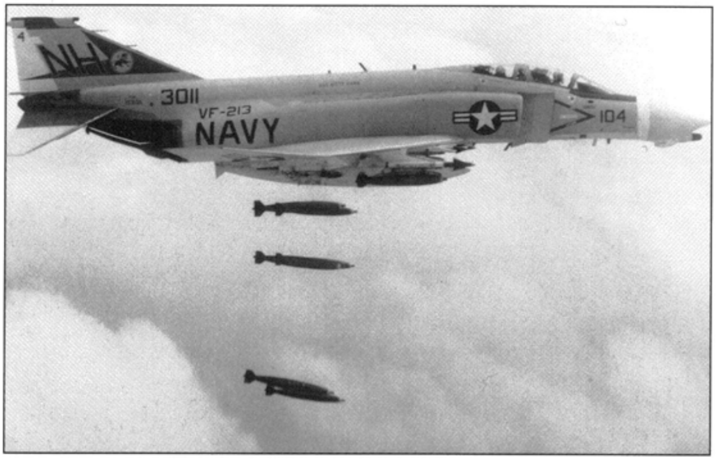
Early 1968 saw limited, but nevertheless aggressive, attacks by VPAF MiGs, which also began to show an interest in US electronic warfare aircraft as well. On 14 January, a USAF EB-66C was shot down over Laos by two 921st Fighter Regiment MiG-21s (flown by Nguyen Dang Kinh and Dong Van Song), and a Navy EC-121 was pursued as it left its patrol station over the Tonkin Gulf just days later.

This pattern continued into February, when a MiG-21 came within 25 miles of an EB-66C orbiting over central Laos. Moreover, of the attacks that did occur, many were in the southern regions of North Vietnam and Laos, where MiGs had traditionally not ventured.

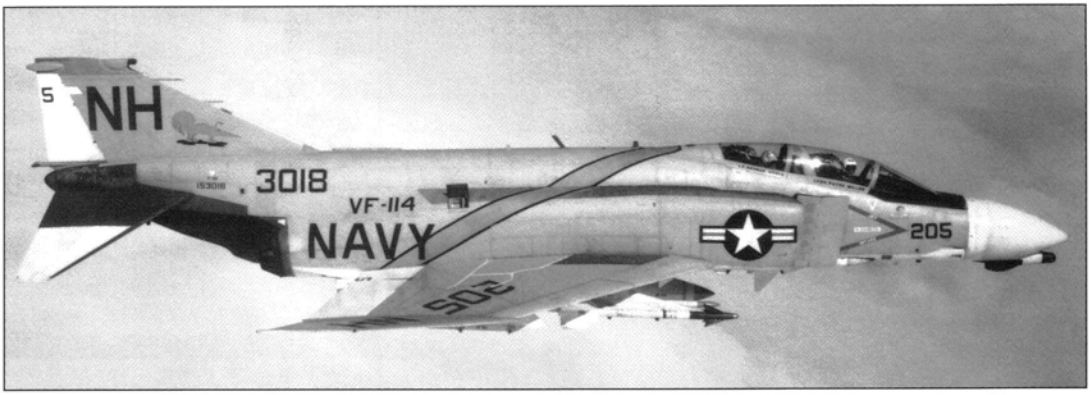
The MiG-21 pilots had also changed their tactics, for they had abandoned their solitary 'shoot-and-scoot' attack runs for multiple passes on targets. The 'Fishbeds' were now also operating in larger flights, and

VF-114 'Aardvarks' would complete four Vietnam deployments during *Rolling Thunder*, and six cruises over the course of the entire conflict. This jet carries four AIM-7Es and two AIM-9Ds, denoting that it was photographed during a MiGCAP or BARCAP mission whilst on *Yankee Station* in 1967-68. Proving that operational flying could be just as hazardous as combat, BuNo 153043 was lost in a mid-air collision with fellow VF-114 jet BuNo 153003 on 15 April 1968. All four crewmen were successfully rescued (*US Navy via Naval Aviation Museum*)





As with all of its Vietnam War *WestPacs*, VF-114 made its 1967-68 deployment aboard *Kitty Hawk* with VF-213. To split the burden of flying multi-role missions, and to allow some degree of specialisation, each F-4 squadron alternated sortie profiles by flying as strike aircraft for one half of the line period and as fighters for the remainder. This also minimised armament reconfiguration problems. The versatility of the Phantom II is clearly shown in this photograph, *Black Lion 104* carrying a mix of Sparrow and Sidewinder missiles, as well as 12 500-lb Mk 82 bombs (*US Navy*)



At some point during VF-114's 1967-68 *WestPac*, the unit added a black-trimmed orange stripe to the fuselage of its F-4Bs. All embarked Phantom IIs within CVW-11 also boasted a full suite of AN/APR-30 RHAW antennae on the fin tip and beneath the AAA-4 infrared sensor on the underside of the radome. Note that the auxiliary engine bay cooling door is open in this photograph of *Linfield 205*, taken in March 1968. CVW-11's efforts on this cruise earned *Kitty Hawk* the first Presidential Unit Citation awarded to a carrier during the Vietnam War. This honour was bestowed on the ship for spending 90 consecutive days on the line (*via Aerospace Publishing*)

On *Yankee Station* with CVW-11 and the *Kitty Hawk* in 1968 was CVW-9 and the *Enterprise*. VF-92 shared the fighter duties with VF-96 on this cruise, and lost three jets on deployment – one to a MiG-21 and two operationally, including this machine on 2 June 1968. The crew were recovered (*via Brad Elward*)

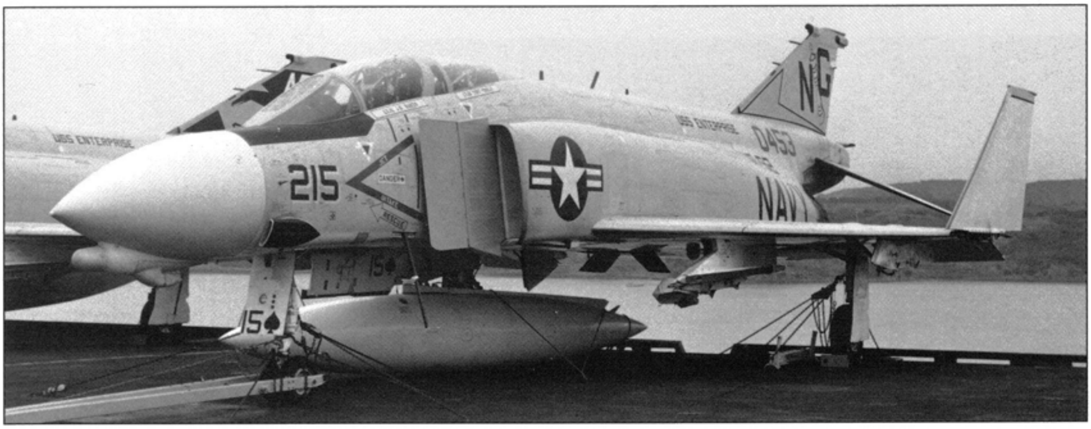
on one occasion no less than four MiG-21s were joined by four MiG-17s. Overall though, air operations were greatly restricted for much of February because of persistently poor weather.

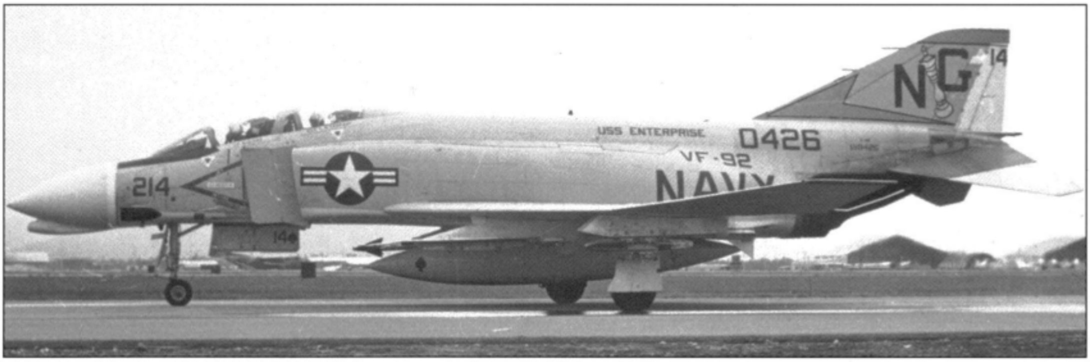
And in the engagements that did take place, the Air Force claimed all the kills, although the price it paid for the five victories scored (exclusively by F-4Ds) was three aircraft shot down – an F-105D, an F-4D and an F-102A, all of which were claimed by MiG-21s from the 921st Fighter Regiment.

On 31 March, just a little more than three years after *Rolling Thunder* strikes had commenced, President Johnson announced that he was halting all air strikes north of the 20th latitude. Shortly thereafter, the line was moved further south to the 19th Parallel. This cessation shifted the bulk of American air power southward, beyond the range of both GCI units and MiGs, as well as most of the North's SAM sites.

Following the bombing halt, the VPAF immediately began to move its MiGs back into North Vietnam from their bases in China, where they had been hiding from the *Rolling Thunder* assaults on their bases. These fighters now turned their attention to the Navy strike packages, as the only Paks within the permitted bombing areas were Paks I, II and III, of which the latter two were controlled by the Navy.

To counter the renewed MiG threat, the Navy implemented a plan calling for all strike aircraft to leave the area when MiGs were sighted in order to give the F-4 crews a chance to launch their AIM-7s at greater ranges, and without the need for a visual ID. In addition, the Navy





***Silver Kite 214* taxies in at an undisclosed base in South Vietnam after diverting ashore due to bad weather over the Gulf of Tonkin in early 1968. The efforts of both CVW-9 and -11 were often stymied by cloud over the target areas during this period (*via Brad Elward*)**

intended to use communications jamming aircraft to disrupt VPAF GCI units attempting to warn MiGs of impending Phantom II intercepts.

These tactics, combined with the fact that the MiGs were now operating at the limit of their GCI and SAM network, were believed sufficient to alter the air war in favour of US forces. Also significant was the fact that Navy aircraft were much closer to their own GCI, and could now rely on American SAMs for protection. Indeed, on 23 May a MiG had been downed by a Navy Talos missile launched from the cruiser USS *Chicago* (CG-11) – one of seven fighters claimed by Navy SAMs during the war.

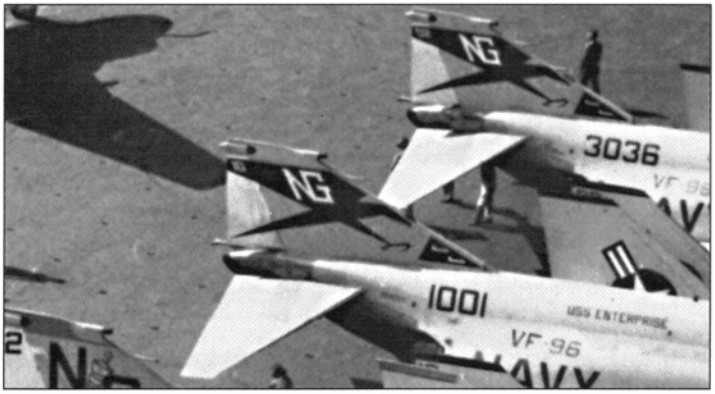
Despite these advantages, the Navy faced a tough time, and in most cases, its failings could be attributed to poor weapons performance. For example, on 7 May 1968 five F-4Bs from VF-92 (embarked on the *Enterprise*) engaged a section of MiG-21s and fired two Sparrows. Both rounds missed, but in the ensuing fight F-4B BuNo 151485/NG 210 was lost to an AAM fired by the 921st Fighter Regiment's Nguyen Van Coc. The Phantom II's crew, Lt Cdr W M Christensen (pilot) and Lt(jg) W A Kramer, were both recovered.

Two days later, two VF-92 Phantom IIs again engaged three MiG-21s, firing four Sparrows. Although it is believed the crews scored one 'probable' and one 'possible' kill on this occasion, no official confirmation was forthcoming.

A KILL AT LAST

Although VF-92 had seemingly missed out on both 7 and 9 May, sister-squadron VF-96 did at last register a kill for CVW-9, although this still remains unconfirmed by the Navy to this day.

On the morning of 9 May, two F-4Bs launched from *Enterprise* and established their ForceCAP (Task Force Combat Air Patrol) orbit off the southern SAR east of Hon Matt, along a north-west to south-east axis. In the lead jet (BuNo 153036/NG 602) was USAF exchange pilot Capt John P Heffernan and RIO Lt(jg) Frank A Schumacher, with Lts Robert H Clime and Eugene L Sierras in the second fighter (NG 611).



VF-92's sister-squadron within CVW-9 was VF-96, which debuted its distinctive 'Black Falcon' marking on the 1968 deployment. Arguably the most famous squadron emblem in naval aviation during the Vietnam War, it had been designed by VF-96 RIO Lt(jg) John E Wohlfiel between the 1967 and 1968 *WestPacs*, and applied to the unit's F-4Bs at Miramar prior to embarking on the *Enterprise* on 3 January 1968 for the unit's fourth wartime *WestPac*. Officially approved by the Chief of Naval Operations on 7 March 1969, it remained in use until VF-96 was disbanded in 1975. The Phantom II at the extreme right of this photograph is BuNo 153036, which Capt John Heffernan (USAF) and Lt(jg) Frank Schumacher used to down a MiG-21 on 9 May 1968 (*via Angelo Romano*)

Its deck crammed full of A-4E/Fs, A-6As and EKA-3Bs, CVAN-65 cruises through the Gulf of Tonkin in 1968. CVW-9 lost 11 aircraft in combat and four operationally during its 100 days on the line on this deployment. Of this number, four were F-4Bs (*via Angelo Romano*)

Soon after arriving on station some 35 miles off the North Vietnamese coast, the crews received a message from *Loveland* (the fighter controller), who reported 'MiGs south Bullseye heading south 50, number uncertain'. Shortly thereafter, *Loveland* called 'three Blue Bandits', but instructed the crews to hold missiles and position while the area was 'sterilised'. At about 1017 hrs they were given a 'vector to bogie' and were 'cleared to fire'. The two Phantom IIs headed to the coast, gaining speed and dropping their centreline tanks.

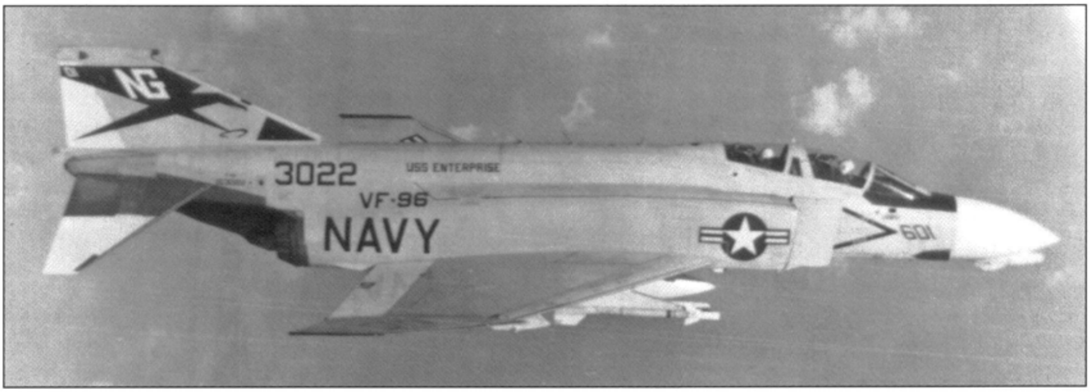
The initial vector to the bogies was 270 degrees, 611 establishing an immediate 'lock' at 12 miles and calling contact to 602, which now became the wing jet. By this time the F-4s were speeding towards the MiGs at a speed of Mach 1.2 and a height of approximately 12,000 ft. Closure was now around 850 kts overtake.

At four-and-a-half miles Lt Clime fired a Sparrow missile, which drifted downward. Capt Heffernan then loosed off a second AIM-7E, which was observed to track in a straight path toward the target. Once the missiles had fired, Lt Sierras looked up and saw the sun, while Clime saw 'a burst of grey smoke' directly where the missile had been, but had lost visual on the round because of a 'thunderbumper' (high clouds) in the area, and the sun into which the aircraft was heading.

While the RIO was trying to locate the missile, the Phantom II's AN/ALQ-51 (missile track breaker) repeat light had come on, telling the pilot to 'break right'. Clime then triggered chaff, consuming a total of 19 bundles. As the F-4 pulled from ten to fifteen degrees off, the RIO saw an 'instantaneous blossom and then break lock'. The Phantom II's defensive turn meant that the jet was now heading away from the target area.

Minutes after the first MiG had been engaged, Clime and Sierras had an encounter with a second fighter. Just before the crew had fired its first AIM-7, Heffernan had started to descend, crossing to the other side of 611. From below, Clime saw both launches, and noted that 'the first

VF-96's CO for its 1968 *WestPac* was Cdr Joseph M Paulk, and *Showtime 601* (BuNo 153022) was 'his' aircraft. This photograph was taken prior to the unit's MiG kill in May, as two victory symbols were painted in the small black triangle at the fin root in the wake of this success. The second marking denoted the Chinese MiG-17 downed by VF-96 in April 1965 (*via Peter Mersky*)



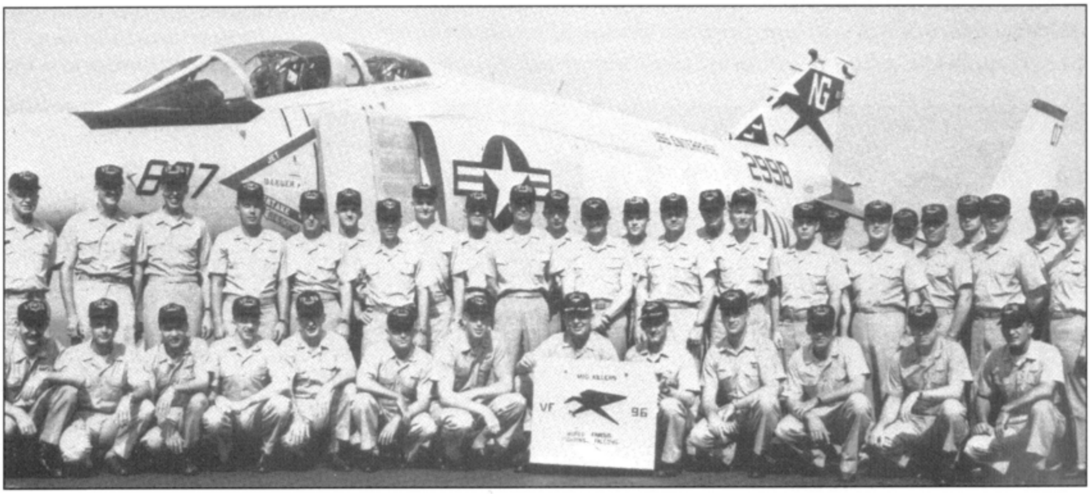
This photograph graphically illustrates the bad weather encountered by carriers on *WestPac* in 1968, CVAN-65 shuddering through mountainous waves en route to the Japanese port of Sasebo from Pearl Harbor in mid-January. The 'Big E' subsequently spent several weeks on the hastily-created *Defender Station* in the Sea of Japan following the seizure of the naval 'spy' ship USS *Pueblo* (AGER-2) by the North Koreans on 23 January 1968. The carrier finally commenced *Rolling Thunder* operations from *Yankee Station* on 22 February (*via Peter Mersky*)

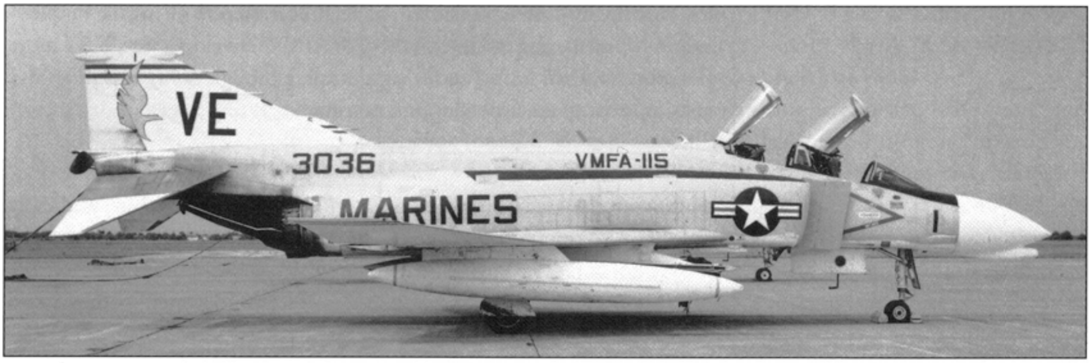
missile seemed to stay level and the second appeared to guide well straight along the aircraft axis'.

As Heffernan broke away from his wingman because of the missile threat warning, Schumacher picked up a second contact and 602 fired off another Sparrow at just over five miles. While the missile was in flight, both the pilot and RIO observed a 'wing flash' from the sun. The pilot saw a second flash, followed by a fireball and black smoke. A second contact was then picked up at 13 to 15 miles. 'About 15 seconds later, with lock-on at 11 miles head-on noted (and) 1600 knots closure', the crew attempted to fire a missile, and the EPU (electrical pulse unit, which supplies internal power to the missile) ignited, but the Sparrow failed to fire or leave the launcher.

The crews' post-mission report noted that, in their best estimate, and because of the missile's performance, visual, and radar cues, Heffernan's second shot 'was a kill'. Indeed, through electronic intelligence, VF-96 confirmed that of the three MiG-21s airborne at this time, only two radar contacts remained after the second Sparrow round had detonated.

VF-96's 'Class of '68' pose for the squadron's cruise book photograph towards the end of CVAN-65's *WestPac*. 'MiG killers' Lt(jg) Schumacher and Capt Heffernan can be seen in the front row, third and fourth from the right respectively. Squadron CO, Cdr Paulk, is crouched immediately behind the VF-96 *MiG KILLERS* sign, whilst the creator of the 'Black Falcons' emblem, Lt(jg) Wohlfiel, is standing at the extreme right. Note the MiG silhouettes in the black triangle on the tailfin of *Showtime 607* (*via Peter Mersky*)





Heffernan and Schumacher's *Showtime 602* was transferred to the Marine Corps at the end of CVW-9's 1968 *WestPac*, and it would see out the rest of its military service with the 'Flying Leathernecks'. Initially flown by VMFA-323, the fighter completed two combat tours with VMFA-115, flying from Chu Lai and Da Nang. Seen here in more peaceful times at Misawa AFB, Japan, in August 1974 (the unit was then based at Naha, on Okinawa), the veteran Phantom II was rebuilt as an F-4N in 1975-77 and then issued to reserve-manned VMFA-321. It was finally written off in an accident on 21 January 1981 (*Norm Taylor*)

Debuting the F-4J in combat, VF-102 experienced a frustrating *WestPac* deployment on the *America* in 1968. The unit frequently encountered MiGs but failed to down a single example through persistent radar, fire control or missile failure. To make matters worse, the squadron CO, Cdr W E Wilbur, and his RIO, Lt(jg) B F Rupinski, were shot down by an 'Atoll' missile fired from a MiG-21. Wilbur was subsequently captured but Rupinski was killed (*via Peter Davies*)

Despite this information, some post-war histories have listed this claim as a 'probable' (the USAF, for example, does not include Capt Heffernan in its official list of 'MiG killers'), while others have speculated that the MiGs could have been Chinese fighters, which might explain why the crew did not receive any medals for this shoot-down.

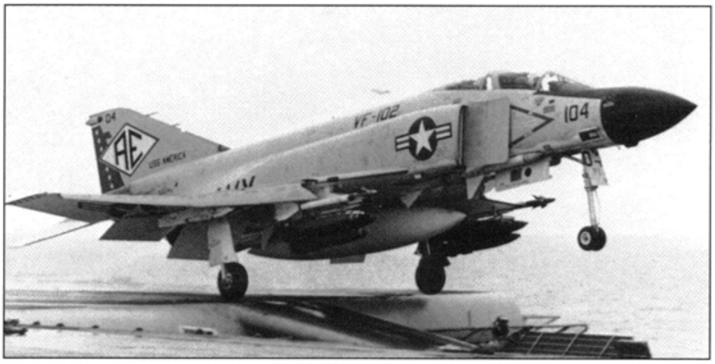
On 16 June, the pattern of engagements typified in May continued as two VF-102 F-4Js from USS *America* (CVA-66) encountered a pair of 921st Fighter Regiment MiG-21s over Do Luong. Four Sparrows were fired but no hits were registered. VF-102, however, had BuNo 155548 downed by an 'Atoll' missile fired by Dinh Ton, and although squadron CO, Cdr W E Wilbur, ejected and was captured, his RIO, Lt(jg) B F Rupinski, was killed. Wilbur and Rupinski had suffered radio failure at a crucial point in the engagement, thus failing to hear a missile warning shouted by their wingman.

Further unsuccessful missile launches took place on several other occasions during June and in total, F-4s from the *Enterprise* and *America* launched over 17 AIM-7s in three engagements without registering a hit.

The vast number of missile failures, and difficulties with ACM, as highlighted by the problems experienced by the Phantom II crews on station during the early summer of 1968, were the result of many factors. Here, ex-Topgun instructor Jim Ruliffson explains his view of the weaknesses in the F-4 community as a whole during the *Rolling Thunder* years, his comments reflecting the tenure of many of the actions during 1968;

'I've always contended that the F-4 was easy to fly in a mediocre way, but very difficult to fly well in ACM. Contributing to this theory were the following factors. Firstly, early lieutenant and above transition pilots came from the Demon (F3H) community, where they had flown an interceptor instead of a fighter, and been trained with the attendant focus on interception, where 30 degrees of bank was an unusual attitude.

'Secondly, the early Navy and Air Force Phantom IIs (F-4B/J and F-4C/D, respectively) had no internally-mounted gun, and the missile envelopes were narrow, hard to recognise visually, and were "foreign" to previous experience.



'Thirdly, no one understood the technical aspects of missile employment. Manoeuvring to either AIM-9 or AIM-7 envelopes was WAY more complicated than lining up for a guns kill, although doing this in an F-4 presupposed an unsuspecting and non-manoeuvring target.'

VF-33's SOLE MiG KILL

Following the mixes between MiGs and F-8s during late June and early July (which resulted in two kills for the older Navy fighter), the last Phantom II fighter engagement of *Rolling Thunder* took place on the afternoon of 10 July, when four MiG-21s were detected as they raced south to harass Navy strike forces.

Twenty-four hours earlier, MiG-17s had attacked an RF-8 reconnaissance aeroplane and its escort, resulting in a Crusader kill for Lt Tony Nargi of VF-111 Det 11 (embarked in the *Intrepid*).

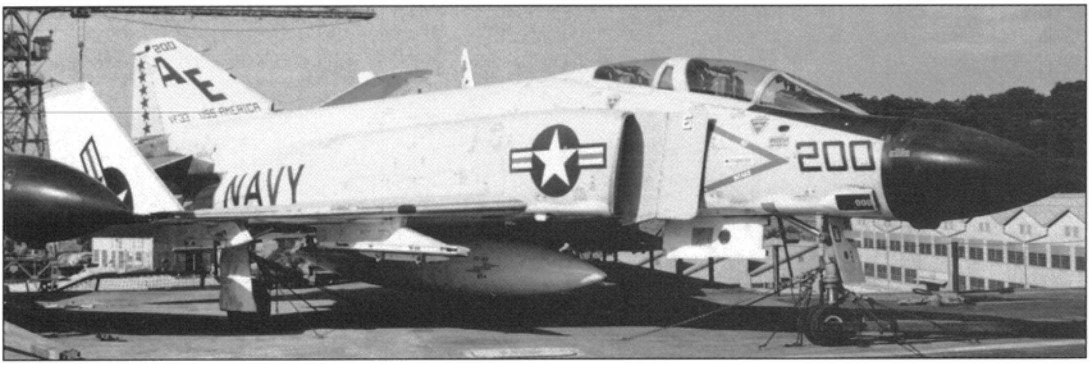
On the 10th, and pursuant to the Navy's new policy, all friendly aircraft were cleared from the area, and the Phantom IIs went searching for the quartet of MiG-21s. The victorious pilot, Lt Roy 'Outlaw' Cash (whose famous uncle was just about to release his legendary *Johnny Cash at Folsom Prison* recording), describes the engagement;

'We had been on *Yankee Station* since the end of May, with one visit to Cubi Point in late June, so we were back after a "July 4th" break at the Cubi "O Club". On 10 July 1968, I was scheduled for a MiGCAP as wingman to Maj Charlie Wilson (callsign "Rootbeer 202" as I recall), a USAF exchange pilot who had been in the squadron for about a year, and had joined us on our Mediterranean cruise the year before – his RIO on this sortie was Lt(jg) Bill Williams. I made the whole Med cruise, so I was fairly experienced both in the aircraft and the squadron.

'Our jets were brand new F-4Js (Cash flew BuNo 155553/AE 212), our Med cruise F-4Bs of the previous year having been traded in for them in early 1968.

'Charlie and I (with Lt Joseph 'Ed' Kain as RIO) launched mid-afternoon at around 1500 hrs and were assigned a MiGCAP station about 15 miles off Vinh, clear of the beach but close enough to "Buster" feet dry if needed. We determined soon after launch that Charlie's radar was marginal to non-existent, so it was agreed that if we took a vector for bandits I would assume the lead. We quickly established CAP station, then about 45 minutes to one hour into the flight, our controller, *Raider* (on the cruiser USS *Horne* (CG-30)), called us over to cipher frequency to alert us to impending MiG activity.

Sharing the fighter responsibilities with VF-102 aboard the *America* in 1968 was VF-33. This photograph shows the unit's 'CAG bird' at rest aboard CVA-66 during the carrier's Yokosuka portcall in August. The 'Tarsiers' had certainly deserved a break from the fighting, as in July the unit had flown 524 sorties and accumulated 917.9 flight hours – 178 sorties and 327.8 hours were flown at night. Exposed to 'MiGs, missiles and AAA' on a near-daily basis, VF-33 lost three jets (and one crewman) and VF-102 two machines (and also one crewman) in combat (*via Aerospace Publishing*)



'Basically, the information boiled down to the fact that MiGs were about to launch and sortie down to attack the A-7s on their strike missions below the "no-bomb" line just north of Vinh.

'*Raider* kept us apprised of the increasing activity and MiG communications (our ECM and "spy" planes had picked up good info on the MiGs, apparently), switching us back and forth from clear to cipher frequencies. We told *Raider* that in the event we were vectored, we wanted to fly a specific attack profile, and they concurred. That profile was as follows – we would vector west at high speed and low altitude to gain a position south-west of the approaching MiGs so as to be able to vector north-west with the afternoon sun over our left shoulders. That might provide surprise, and put us in a position so the bandits could not see us well – coming out of the sun.

'The MiGs' tactics at this point in the war were to dash in over the "no-bomb" line, shoot at the A-7s and retreat north before fighters could be vectored for them.

'The MiGs finally launched and started south. *Raider* vectored us west, we jettisoned our centreline tanks, armed missiles and hit the deck. We went down to 1500 ft and got to the karst ridgeline just as the MiGs headed south and crossed the line. We were vectored north-east, turned and pointed to the area they were coming from, and immediately got a PD (Pulse-Doppler) radar contact – at 32 miles, as I recall. We were still low, and the MiGs were at around 5000 ft.

'On cipher we were told that they were two "blue bandits", which identified them as MiG-21s (MiG-17s were "red"), and there were no other known bandits in the area. Also, we were told that the MiGs' communications were being jammed by our EA-3 ECM bird, sitting just off the coast. That meant they probably would not know we were coming. Great sport!

'We continued at low level at a speed of 550 kts, with smoke off (the anti-smoke device on the F-4J diminished the amount of smoke emitted by the J79s), in combat spread formation, with Charlie at my three o'clock position so that he could look through me at "bad guy" country. He still had no radar. Since the MiGs had been "positively" ID'ed, I asked for "clearance", meaning clearance to fire. To my utter amazement *Raider* responded "Roger, contacts are two blue bandits – you are cleared to fire!"

'Ed and I were ecstatic, since it was normal to have to gain VID (Visual ID). I checked that the switches were armed and ready, and made sure that the missiles indicated good. We were loaded with two AIM-7E Sparrows and four AIM-9G Sidewinders. I reviewed in my mind procedures for switching from "radar" to "heat", and we kept on tracking.

'We maintained radar contact continuously, down to 20 miles, and we checked everything again, keeping Charlie up to speed on the situation. He was to maintain visual lookout for other bandits who might be hiding in the weeds. At 12 miles I reconfirmed "clear to fire" with *Raider* and began looking intently for any sign of bogies. At eight miles I called "tally ho two, on the nose". What I really saw were two glints from the bright sun behind us on the silver fuselages of the MiGs, not the aircraft themselves, but from eight miles I never lost sight of them.

'Locked on, dot in the centre, MiGs head-on – it looked good for Sparrow shots down the throat. At five to six miles the missile launch circle began to expand, indicating maximum range, expanding to mid or optimum range. At four miles the circle reached its largest diameter, indicating that the optimum firing parameters had been met. I fired off two Sparrows and called "Fox one, Fox one". The Sparrows appeared to guide, heading for what looked like an imminent kill.

'The range on radar suddenly appeared to freeze at three-four miles, and I watched as the MiGs, now fully in sight and looking like aeroplanes and not sun glints, began a lazy left turn away from us . . . and the missiles! Guess what the Sparrows did? They saw the decreasing Doppler, and by the time they got to the MiGs the missiles were looking at a belly-up, beam aspect. They exploded harmlessly at the wingman's two o'clock position, about 100 yards away.

'Until the Sparrows exploded, the MiGs did not know we were there. The wingman, apparently startled by the Sparrows, broke into the explosions, but then turned back left to stay with his leader. He then apparently realised I was quickly approaching a good six-seven o'clock firing position, and again broke hard into me, by this time rapidly closing to a firing position. The MiGs were only flying at about 350 kts, so the wingman quickly came into me and was just as quickly inside minimum range.

'I had switched to heat and fired off a Sidewinder, but the aspect was almost 90 degrees off at less than 1000 ft, so the AIM-9 missed. However, it scared him so badly he continued his descending right break, hit the deck and headed north out of the fight.

'Meantime, I was performing a high-g left barrel roll to get in behind the leader who, by this time, had figured out the programme and was breaking right into me. My wingman broke left over the top of me and spotted two more MiG-21s down in the weeds, about three miles away. Simultaneously, *Red Crown* (USS *Long Beach* (CGN-9)) broadcast, "Heads up 'Rootbeers'. You got two more bandits west".

'I was too busy to respond, and Charlie was telling me he saw them too, so I continued turning, and with my energy, combined with the MiG leader's bad position and slow speed, I quickly attained the six o'clock at about 1500 to 1800 yards and fired an AIM-9G. I watched it guide and impact the tail area of the MiG, blowing the empennage completely off. The pilot obviously knew he was had because almost simultaneously with the impact I saw his 'chute. It appeared he had ejected either just before impact, or as it occurred.

'Meantime, Charlie had called out something to me about breaking. I didn't hear it, but what he said was, "'Outlaw', break left . . . I mean RIGHT!" (I got to hear it on the tape later). One of the MiGs hiding in the weeds had fired off an "Atoll", well out of range, and I was vaguely aware of its smoke trail corkscrewing lazily across the sky, well away from me.

'I broke back to where the other MiGs were coming from and saw them hit the deck about two-three miles away. They turned tail and ran. As soon as they were tail-on they disappeared, vanished – couldn't find them, visually or on radar, so I called to Charlie to "Unload, unload. Bug out, bug out!" and we headed for the water. We called "feet wet", and *Raider* called and confirmed, "Splash one blue bandit, Rootbeers". I responded with something like, "You betcha *Raider*. I got that son of a gun".

Lts Roy Cash Jr and Joseph E Kain Jr pose with their suitably-decorated F-4J (BuNo 155553) several days after their MiG-21 kill on 10 July 1968. The caption for this official US Navy photograph read;

'A star of a different kind was added to this Phantom on board the aircraft carrier *America* in the Tonkin Gulf. Two proud aviators, pilot Lieutenant Roy Cash Jr., Memphis (left) and Radar Intercept Officer Lieutenant (junior grade) Joseph "Ed" Kain Jr., Haverton, Pa, downed a North Vietnamese MIG-21 during an engagement west of Vinh on July 10.

'The MIG symbol is now displayed on the aircraft, *America's* bridge and the staterooms of the Phantom crew. The MIG kill was the first for Fighter Squadron 33, Carrier Air Wing Six and the USS AMERICA, ALL on their first deployment to the Tonkin Gulf. AMERICA is home ported in Norfolk; VF-33 is from Oceana, Virginia'
(*US Navy via Peter Mersky*)

'We hit the tanker, took on enough gas to get to the ship, and I performed the best rendition of a victory roll I could imagine. The ship and Air Wing crews swarmed me after landing in much the same way depicted in the movie *Top Gun*, when "Maverick" and "Iceman" return to the ship after shooting down the bad guys. It was a neat feeling to be a hero for the day – in fact, hero for the cruise.

'I gave up smoking as a result of that kill. I had told some of the guys jokingly, "If I shoot down a MiG today I'm going to quit smoking". I suppose God said, "Oh yeah? Let's see if you really mean it". I haven't smoked since.'

This engagement was important from the standpoint that it illustrated how the Navy's engagement philosophy 'should' work if all of the tactics developed earlier in the year came together. The GCI jamming was excellent, and played an important role in confusing the MiGs by severing them from their guidance.

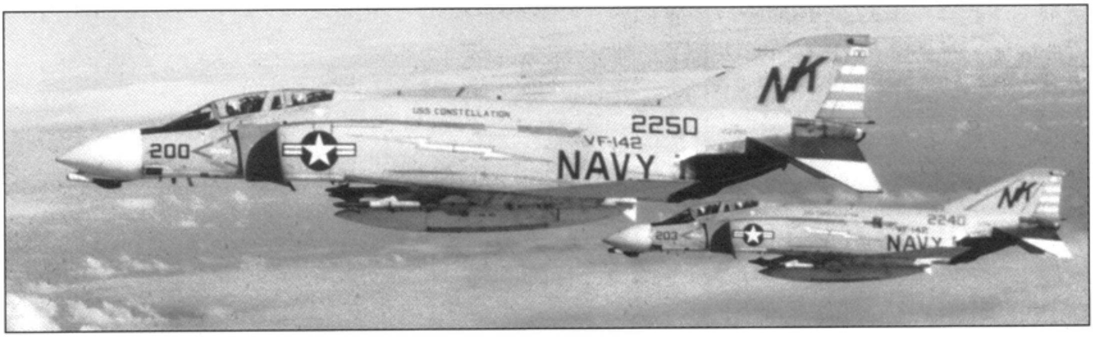
Clearing the area also permitted the Phantom II to employ its BVR weapon, the Sparrow III, without fear of inadvertently hitting a friendly. Had the Sparrow functioned properly, the kill would have been textbook. This engagement was also significant because it represented not only the squadron's first MiG kill, but also the first aerial kill for an F-4J, and for an Atlantic coast-based fighter squadron.

But the successes of the 10 July engagement were short-lived, and the Navy's troubles continued in August when, on the 17th, two F-4s from VF-142, embarked on the *Constellation*, were fighting it out with a pair of MiG-21s. The lead Phantom II crew settled into a firing position, only to discover that their missile would not launch. The MiG then lit its afterburner and soared off, but another 'MiG' appeared in the distance, head-on.

The second 'MiG' fired a missile, hitting the F-4B (BuNo 151404/NK 206) flown by Lt(jg) Mark Gartley and Lt Bill Mayhew. The Phantom II went down and its crew were delivered into North Vietnamese hands for the remainder of the war. It is believed that the other 'MiG' was in fact an F-4, and possibly Gartley and Mayhew's wingman. If this was indeed the case, then the missile that downed them was an AIM-9D.

The summer of 1968 had proven more than a little frustrating for the Navy's deployed Phantom II units. They had launched dozens of AIM-7Es and managed just one unconfirmed hit. The AIM-9D was enjoying marginally better success, but crews were still having problems defining its firing envelope – particularly in the heat of combat or in a high-g environment.

From an aircraft perspective, the Navy had lost two Phantom IIs to MiGs and officially 'bagged' just one VPAF fighter in return (although VF-96's 9 May kill was almost certainly a definite, despite the Navy failing



These F-4Bs from VF-142 are seen on BARCAP over the Gulf of Tonkin during late 1968. Like VF-92 and VF-102 before them, this unit lost an aircraft in aerial combat with MiG-21s during the unit's 1968-69 *WestPac*. Some sources state that the jet (BuNo 151404) was actually downed – on 17 August 1968 – by an AIM-9D fired from a second VF-142 Phantom II. This series of losses prompted senior officers both in the fleet and the Pentagon to start asking serious questions about the tactics being used by frontline units (*US Navy*)

VF-143 also participated in *Constellation's* 1968-69 *WestPac*, this cruise being the unit's fourth to the Gulf of Tonkin since 1964. This view of *Tap Room 303* was taken in late 1968 at Chu Lai, in South Vietnam, home to several Marine Corps Phantom II units, including VMFA-115 – note the unit's 'Silver Eagle' 'zap' on the F-4's splitter plate. The aircraft had diverted ashore following a weather-affected bombing mission 'up north'

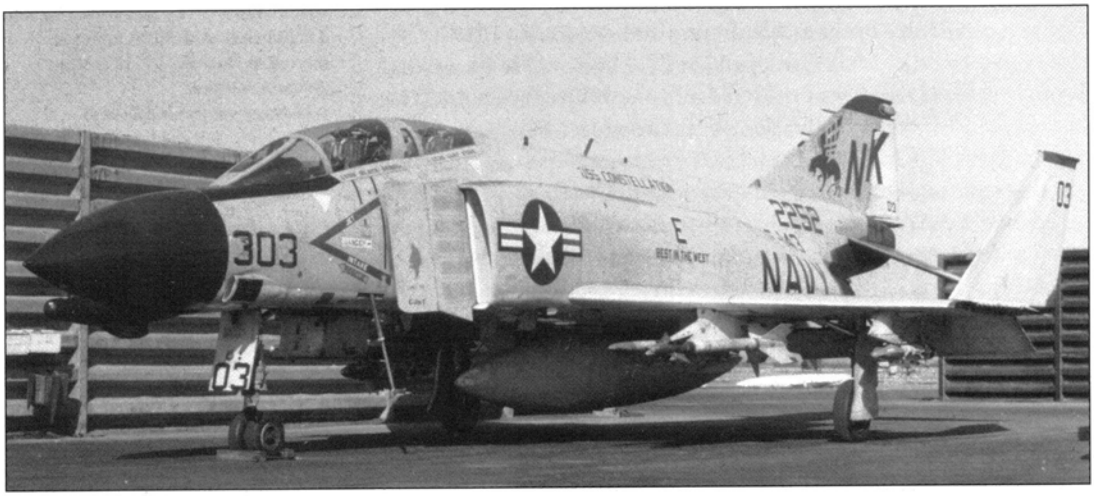
to confirm this), and a couple of possible/probables. To make matters worse for the F-4 community, the austere F-8 had faired considerably better, claiming five MiGs destroyed for no losses in six engagements.

USAF F-4Ds had also enjoyed mixed results in 1968, losing three Phantom IIs (as well as an F-102A and an F-105D) to MiGs, while striking eight VPAF fighters from the sky. More importantly, however, all of the confirmed USAF MiG to Phantom II kills were by 'Fishbeds'.

On 1 November 1968, the air campaign known as *Rolling Thunder* came to an end with the announcement by President Johnson that he was suspending all air attacks against North Vietnam in exchange for assurances from Hanoi that they would respect the DMZ, stop supporting insurgency operations in the South, and engage in peace talks. US Air Forces continued to fly *Blue Tree* reconnaissance missions throughout 1968 and 1969.

In all, over one million sorties were flown as part of *Rolling Thunder*, delivering 500,000 tons of munitions and costing the lives of 382 pilots and 289 airmen, and placing a further 702 in North Vietnamese PoW camps or on the Missing in Action (MIA) list.

In air-to-air combat, Navy F-4 crews had claimed 13 VPAF MiGs (including the 9 May 1968 MiG-21 'kill' by VF-96), seven of which were MiG-17s and the remaining five MiG-21s, plus two An-2 cargo aircraft, at the cost of five Phantom IIs. The F-4, despite the touting of many that it was the supreme fighter, trailed the F-8 by five kills, and posted an F-4-to-MiG kill ratio of just 3.25 to 1.



TOPGUN

As the *Rolling Thunder* aerial campaign ground to a halt in 1968, an event was unfolding back in the United States that would change the face of naval aviation. As the statistics on the air war were amassed and digested, few could argue that the Navy F-4 crews had performed to a historical par.

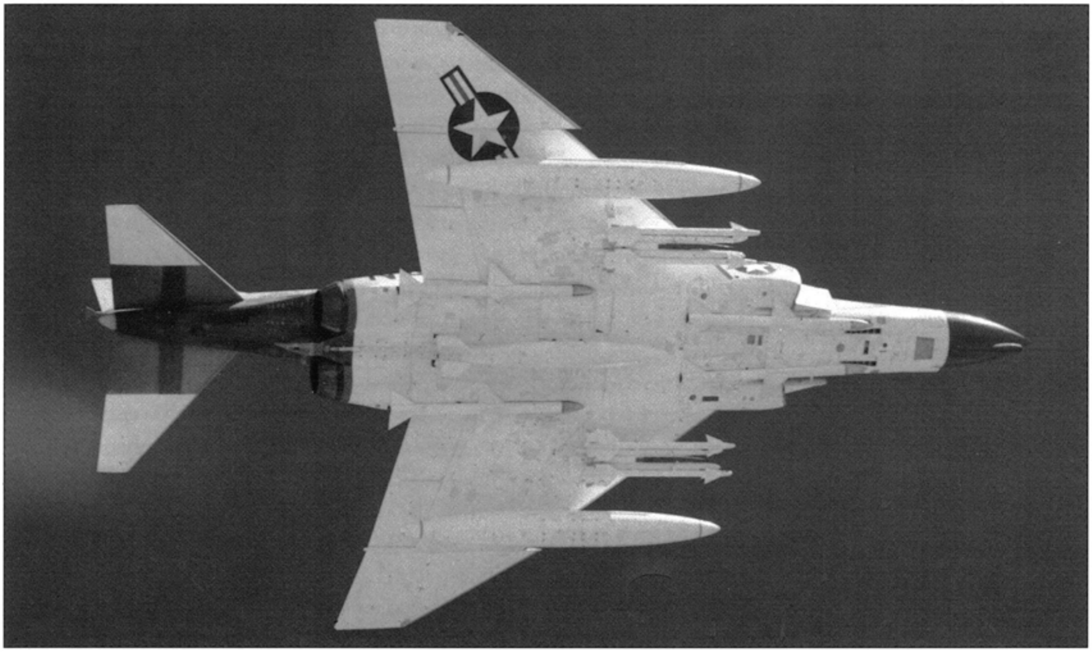
Each year of the air campaign saw an ever greater number of aircraft lost to MiG activity, rising from a low of one per cent in 1965 to three per cent in 1966 and eventually reaching twenty-two per cent by the end of 1968. While this rise can in part be attributed to improved anti-SAM and anti-AAA tactics, it nevertheless signalled that there was a serious problem.

Despite the air combat experiences gained in World War 2 and Korea, the Navy as a whole had abandoned the art of dogfighting and placed too much faith on technology to supplant raw aerial skills. Certainly the F-8 community had its 'gunfighters' who still understood the art of ACM, and the value of manoeuvring to an enemy's six o'clock position. But the F-8 community was shrinking and the aircraft on its way out as more squadrons transitioned to the F-4 and the *Essex*-class carriers, capable of operating only Crusaders, were retired.

Perhaps the first sign of this trend towards a reliance on missile technology was the elimination during the late 1950s of the Fleet Air Gunnery Unit (FAGU), which emphasised ACM and gun skills. Possessing no BVR capability, F-8 pilots knew that they had to drive to the heart of the enemy's rear to obtain a good gun or heat-seeker kill.

But the Navy's failure to abide by time-tested ACM tactics was only half the story. There was a serious hardware problem as well. Simply put,

In standard fighter configuration, the F-4 carried four AIM-7E Sparrow III missiles on stations 3, 4, 6 and 7, and two AIM-9D Sidewinders (one apiece) on stations 2 and 8. Strike configured Navy F-4s carried their air-to-ground ordnance, plus two AIM-7Es on stations 3 and 7. It was the employment of all this weaponry that concerned senior naval aviators as *Rolling Thunder* ground on, and they in turn created Topgun to ensure greater success for Phantom II crews 'hassling' with VPAF MiG-17s and MiG-21s. This photograph was taken in December 1964 by the CO of VF-96, Cdr Bill Fraser. Specially cleaned up for the camera, F-4B BuNo 150638 is seen in BARCAP/TARCAP (and eventually MiGCAP) configuration. Aside from the jet's eight missile load-out, note its ubiquitous centreline 600 US-gal 'fixture' tank (*via Robert F Dorr*)



the missiles provided to the Navy and Air Force crews – the same ones that were touted as the 'end-all' to close-in dogfighting – were not living up to their advertised use. Regularly, missiles would not launch, or failed to track, and even when they did track, there were still numerous occasions when they failed to explode or simply missed the target altogether.

Prior to the Vietnam War, the AIM-7 Sparrow had been held out as the world's premier BVR missile. The weapon had shown both in pre-delivery testing and in-fleet training exercises that it could down enemy aircraft at long-range before the target even knew F-4s were in the area. While this was a fine concept when being launched over test ranges in the Nevada or California deserts, or the Pacific missile ranges, the Sparrow failed miserably in an environment governed by restrictive ROE that required visual identification before launch.

And with the small size of the MiG-17 and MiG-21, abiding by these ROEs meant that the bandit was now within the Sparrow's minimum range, and essentially useless unless the crew could extend and re-acquire.

Moreover, ROEs aside, the AIM-7 was simply conceptually ahead of its engineering time. For various reasons, Sparrows had a very high failure rate (overall 63 per cent), and even when launched within envelope, suffered from guidance problems (29 per cent missed). The missile was complex to operate, and took five seconds between lock-on and launch, which was totally unsuitable for the fast-moving dogfight environment.

To further complicate matters, the AIM-7's symbology was geared towards a straight and level flying target such as a Soviet bomber, rather than a manoeuvring VPAF fighter. Moreover, it left huge white smoke plumes, making its presence well known to its intended foe.

The heat-seeking AIM-9B Sidewinder proved equally problematic. While experiencing a somewhat better kill ratio than the Sparrow, the AIM-9 nevertheless suffered a 56 per cent failure rate, and missed approximately 28 per cent of its targets. Actual combat also exposed the Sidewinder's exceptionally small firing envelope, which shrunk dramatically if either the target or the host aircraft manoeuvred!

The AIM-9 was also distracted by clouds and ground-clutter, and crews often misunderstood the missile's firing envelope, taking its 'tone' as an indicator that the missile was ready to fire, rather than an indication that it had sensed a heat source. Even with good tone, the Sidewinder had to be launched within its envelope – some 28 per cent of AIM-9B firings were out of envelope. Fortunately, this figure dropped some to 13 per cent with the introduction of the greatly improved AIM-9D.

There were other problems as well. The F-4 itself had many limitations built into its design, as John Nash remembers;

'The radar was unreliable. The F-4 cockpit was not configured or designed to function in the high-g ACM environment. We (VF-121/Topgun) supplied ACM cockpit optimisation recommendations in 1968-69 which helped considerably, but "too little-too late" mods didn't make it until the war was over.'

ANSWERS TO QUESTIONS

It is interesting to note that the Navy and the Air Force, when faced with essentially the same dilemma, came to drastically different conclusions as to the root cause of the F-4's lack-lustre performance in *Rolling Thunder's* air-to-air engagements. The Air Force ignored the possibility that it had a training problem, and instead focused its efforts during the bombing halt on reviving its technology. It introduced the F-4E, with its highly-accurate radar-guided M61 internal cannon and APX-80 IFF interrogator, and also sought the development of an AIM-9B replacement in the form of the AIM-9E and an improved 'dogfight' Sparrow, the AIM-7E-2. This, of course, ignores the Air Force's efforts to develop the AIM-4 Falcon, which proved a total disaster.

By coincidence, one of the five kills credited to the flawed Falcon missile was scored by US Marine Corps pilot Capt Doyle D Baker. On exchange with the USAF, flying F-4Ds with the 13th TFS/432nd TRW out of Ubon, in Thailand, he and WSO, 1Lt John D Ryan, 'bagged' a MiG-17 in 66-7709/OC on 17 December 1967.

Despite drastically upgrading the hardware, the USAF made no co-ordinated efforts to revitalise aircrew training, or to re-evaluate its tactics. Indeed, Air Force F-4 training continued to de-emphasise air-to-air combat, and actually decreased the number of ACM training sorties in favour of air-to-ground sorties.

The Navy, on the other hand, quickly realised that its F-4 crews had been neglected in respect to the amount of ACM training they had received. Part of this realisation came from the recognition of the outstanding performance of F-8 pilots during the *Rolling Thunder* years.

Despite the obvious differences between the aircraft and how they could best fight MiGs, the more significant difference was the quality and quantity of ACM training. While the Navy did introduce some technological improvements such as the F-4J (with AN/APG-59 pulse-Doppler radar) the AIM-9D (and later -9G) and the 'dogfight' Sparrow, the primary focus was on the F-4 crews' lack of any advanced ACM training.

Certainly, there were efforts to boost the jet's abilities as a close-in fighter, and VF-121 took significant steps towards that end by increasing the number of ACM training hops, as well as adding dissimilar ACM hops against F-8s from fellow Miramar-based fleet training unit VF-124.

FORMATION

The Navy Fighter Weapons School (NFWS) formed as a department within VF-121, the West Coast F-4 Replacement Air Group, or RAG, in September 1968 under the direction of Lt Cdr Dan Pederson. The purpose of the department was to serve as a graduate-level course for ACM, and to teach these advanced crews how to return to their squadrons and impart the new knowledge to their cohorts.

Crews coming to the school were expected to already be familiar with basic ACM, and were to have 'a working knowledge of fighter tactics'. According to John Nash, 'Topgun (as the NFWS was soon dubbed) was nothing more than an extended course of the RAG tactics syllabus – a post-graduate course that allowed and demanded that students eat and sleep ACM, and associated air superiority considerations. Topgun used the best and most combat experienced F-4 "drivers" and RIOs that were available, and taught the students to think, plan and execute ACM'.

Earlier that year, in March, the Navy 'brass' in Washington had requested Capt Frank Ault, former CO of the *Coral Sea* and a veteran of several deployments to Vietnam, to form a committee to study the

US Marine Corps Capt Doyle Baker downed a MiG-17 on 17 December 1967 while flying an F-4D on exchange duty with the USAF's 13th TFS/432nd TRW (*via Peter Mersky*)

deficiencies in fighter weapons systems, and in particular the Sparrow. Ault surrounded himself with a capable staff, and left no stone unturned in his quest for answers. 'I was given *carte blanche* to pick anybody I wanted to assist, and to conduct the study in any manner I saw fit'. Ault has described how he approached this selection;

'I looked for people who were recognised by their peers/contemporaries as the most knowledgeable in their respective area of expertise. This resulted in a team of two officers and three civilians – each a self-starter, deeply experienced in their field, capable of independent thought, and with the courage of their convictions. All shared the common characteristics of listeners, not talkers.

'Compartmentalising the "womb to the tomb" study effort permitted me to focus narrowly on each of the five subject areas, and identify the specific credentials required in each case. I wasn't looking for "men for all seasons", but rather "men looking for reasons".'

One of these men was Merle Gorder, a former F-8 tactics instructor at the East Coast F-8 RAG. Ault was told to find a way to increase combat kills by no less than three-fold over that which had already been experienced in Vietnam.

His group started by reviewing all of the prior reports and analysis of air-to-air systems. 'A first order of business', Ault explained in his 1989 article in *Tailhook* magazine, 'was to review what the Navy already had on file'. This included a review of *Sparrow Shoot*, *Combat Sage* and *Red Baron*, as well as other systems-related reports. Ault also conducted field examinations of manufacturing processes, carrier handling and maintaining procedures of the various missiles, and crew weapons employment.

Finally, on 1 January 1969, Capt Ault released his formal written report, totalling 480 pages in length, officially titled the *Air-to-Air Missile System Capability Review*, but later dubbed the 'Ault Report'. In all, the document cited 232 recommendations, one of which championed the establishment of a graduate-level fighter weapons course taught by experts in the field of ACM.

Although many commentators have stated so, Topgun was not created directly from the Ault Report. Indeed, when the findings of the Ault committee were released, work was already underway at VF-121 to develop the Topgun course. However, according to Capt Ault the report played a substantial role in its future.

As previously mentioned, the Ault Report embodied 232 recommendations. Only one of these was the establishment of a fighter weapons school. Precedent for this had been established by the FAGU at NAF El Centro, in California, which had been disestablished some years earlier.

The majority of the meetings of the study group were held at the Naval Missile Center at NAS Point Mugu, again in California. These meetings were usually well attended by members of the West Coast fighter community, and their advice and assistance was always available, and they were always ready to implement work-in-progress recommendations, which, in many cases were their own.

In late 1968 it was decided by Op-05 (pushed by Merle Gorder) to establish an NFWS as a department within VF-121. The latter unit, motivated by people like Pederson and Ruliffson, had already made some modest starts with air-to-air combat training, and the first *official* class

NJ
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115

A 'plain jane' F-4B from VF-121 fires off a Sparrow III over the Pacific in May 1966. The West Coast F-4 Replacement Air Group (RAG) unit which trained new pilots and Radar Intercept Officers (RIOs) trained for Pacific fleet units, VF-121 supplied instructors and aircraft for the first Topgun courses run at Miramar in 1969 (*via The Boeing Company*)

commenced on 3 March 1969. An independent NFWS was not officially commissioned as a command separate from VF-121 until 7 July, 1972.

None of this would have happened without the following;

(1) a report clearly spelling out the need for such training.

(2) participation in the preparation of that report by people who recognised the need for increased ACM training, endorsed the recommendations (which were frequently their own) and were in line to be involved with their implementation.

(3) people who were willing to stick their necks out to get on with it.

(4) low visibility, but effective, support (especially monetary) from Washington.

The report reinforced what the Topgun founders had been preaching. New and improved ACM tactics *must* be taught to the F-4 community.

Also taking place at about the same time, and perhaps equally revealing, were two secret projects called *Have Drill* and *Have Doughnut*, which tested a MiG-17 and MiG-21 'acquired' from the Israelis. Both aircraft were obtained following defections, the MiG-17 hailing from Syria and the MiG-21 from Iraq. The jets were extensively flown by US Navy and Air Force pilots in an attempt to determine first hand the capabilities of the MiGs, and to decipher means to defeat them by using superior tactics.

Following his tour at VF-121 and Topgun, John Nash worked with Project *Have Idea* at VX-4;

'There is no better way to learn to fight MiGs than to fight MiGs. The *Drill* and *Doughnut* projects were quick, and only allowed a limited number of pilots to "see and fight" the MiGs. The projects did allow us to find ways to beat a superior turning fighter. Tactics were written as gospel, and we all trained like we would fight FINALLY! The ringer was that the projects used the best pilots (Navy and Marine), and the MiGs were never flown as effectively in combat as they were in *Drill* or *Doughnut*.

'Flying the MiGs revealed several of their feature characteristics. Both the MiG-17 and MiG-21 were great fighter aircraft. They could out turn any fighter or tactical jet that the Navy had during that period. The MiG-21 could go faster and pull more gs than anything we owned. However, it had zip for radar, zip for missiles, zip for rear visibility (although the F-4 was worse), was a single-piloted aircraft and bled energy like a mother.

'It was hard to see, and if it had been flown by equals to the Navy pilot in Vietnam, it would have been responsible for dozens of kills. The way the US conducted – or ignored – the air war, the MiG-21, in company with the MiG-17, should have wreaked havoc on US Air Forces, rather than just posing a nuisance to our war. The MiG-17 could turn forever, but its speed and energy bleed rates were poor. It was a single-piloted aircraft, with no radar and poor weapons and weapons range.'

As the Ault Report began filtering throughout naval aviation, and particularly the fighter community, the initial instructor cadre was formed under Lt Cdr Pederson's leadership. All of the instructors were experienced crew members, many with Vietnam tours already under their belt. A typical example was Jim Ruliffson, who had completed one combat tour already, and was in the tactics section of VF-121. His speciality with the school was missiles, particularly the Sparrow III. Ruliffson was a superb pilot, and very strong in ACM.

Mel Holmes was also a veteran of a Vietnam deployment, and was regarded as one of the best F-4 pilots in the Navy. Darrell Gary and Jim Laing (a MiG killer with VF-114 in April 1967) were exceptional RIOs, as was Steve Smith, and all had seen action from either the *Kitty Hawk* or the *Enterprise*. These RIOs worked to prepare the school's radar syllabus.

John Nash rounded out the original group, and brought to the school his air-to-ground experience. A superb pilot, he had completed two Vietnam cruises. Pilot Jerry Sawatzky and Intelligence Officer Chuck Hildebrand also joined just before the March classes began. Sawatzky was also rated by his peers as an outstanding pilot.

SCHOOL STARTS

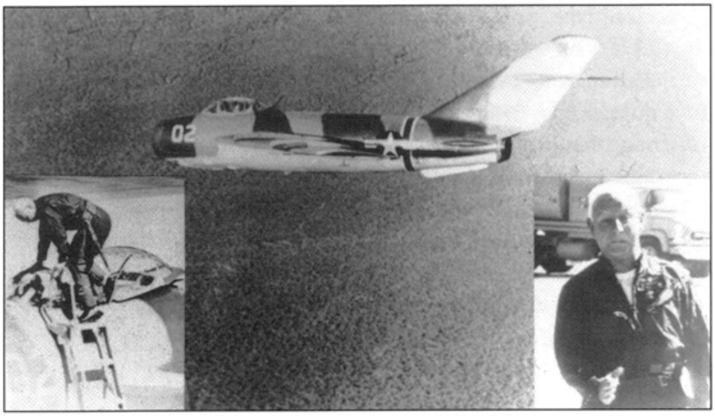
3 March 1969 marked the start of the first course at the NFWS, now informally called Topgun. The course lasted four weeks, and consisted of 75 classroom hours and 25 aircrew sorties. Courses were taught in aerial combat manoeuvring procedures, air-to-air gunnery, air-to-ground delivery, electronic warfare and fighter performance, with briefings on enemy aircraft and weapons.

Three weeks were devoted to air-to-air tactics and one week to air-to-ground tactics. The latter was later dropped, as the air-to-air portion was too complex to be limited to a three-week course. As an indication of its complexity, the course – later to be known as the Power Projection Course – was extended to five weeks.

Students for the NFWS were selected by their squadrons, and were supposed to represent the finest the fleet had to offer. The students, together with two aircraft and two maintenance crews, came to Topgun for the one-month course, and were intended to return to their squadron to impart their knowledge and assume the role of tactics co-ordinators. Topgun was not intended to make the students stars, while leaving their squadronmates behind.

Students for the first class were selected from VF-142 and VF-143, as these units had just completed a Vietnam deployment. This class included Ron Stoops, Jim Nelson, Jerry Beaulier, Cliff Martin, John Padgett, Jack Hawver, Ed Scudder and Bob Cloyes. The first class graduated in April and the crews

Reflecting the classified nature of its subject matter, much of the photography of the early stages of the *Have Drill* Project is decidely 'vague' in quality. Sadly, this is true of these shots of Vice Adm Tom Connelly, who is seen before, during and after a flight in the ex-Syrian MiG-17F (*US Navy*)



immediately returned to the fleet, ready to share their finely-honed ACM tactics with their fellow pilots. As Jim Ruliffson describes;

'Who got sent to Topgun was the prerogative of the fleet squadron CO. Through message traffic, we and our chain-of-command superiors (VF-121 CO and Commander Fighter Wing Pacific) encouraged the squadron COs to pick one-cruise "polished nuggets – both pilots and RIOs" – and, ideally, assign him/them to be the squadron Training Officer upon their return so that the unit could benefit from his/their experience for the rest of that turnaround training, and the subsequent cruise.

'This worked pretty well. It was also generally true, but left unsaid, that the selectees were to be aircrew who were staying in the Navy. By late 1971 every F-4 squadron deploying had at least one crew – sometimes more – that had been through the course. And by then some of us instructors were also rolling back into the fleet.'

When the school started, it had no equipment of its own, and had to 'acquire' its own trailer at NAS Miramar. John Nash commented, 'The problem was simple. We had no extra money, no place to have a Topgun, no aircraft and no syllabus'. These 'asset' problems were in addition to the fact that the instructors were also flying an incredible schedule with VF-121, Topgun's parent command.

Jim Ruliffson explained that conflicts were minimised as much as possible by scheduling the RAG tactics classes around the incoming Topgun classes. 'Once the RAG students passed through the tactics phase, they headed to the boat for CQs (Carrier Qualifications), which meant that we had time to focus on our Topgun commitments.'

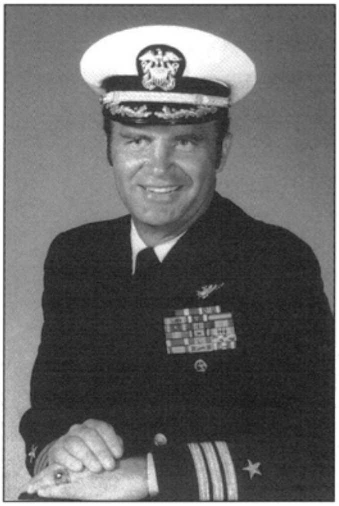
To solve the aircraft dilemma, two-seat TA-4 Skyhawks were borrowed from neighbouring VA-126 (the West Coast instrument flying training RAG) and used by the instructors to simulate communist jets. The TA-4s and later A-4Es simulated the subsonic MiG-17, while the F-8, T-38 Talon and later F-5E Tiger II simulated the MiG-21.

The syllabus was created by the instructors and finalised just as the first class was beginning. Yet, it was recognised that the syllabus would have to evolve. Nash noted, 'The enemy and target for the day/war will dictate the tactics development required'. Moreover, it was understood that there would be some deficiencies in the course work as the instructors honed their skills. 'We began to respond to our "students" inputs and their performance after the first class graduated', Nash explained. 'We tried to fill the holes we saw in the results versus the desired results'.

As the course developed, instructors and students were allowed short flights against the *Have Drill/Doughnut* MiGs. Topgun instructors initially flew the MiGs, followed later by 2v2 instructor/student hops. VX-4 pilots Lt Cdr Foster Teague and Lts Ron McKeown and Mike Welch were 'excellent tacticians in their own right, and quick to exploit any mistakes in the F-4. The common mistakes were trying to turn with the adversary, "arcing" as one tried to separate from the adversary, and lack of precise F-4-to-F-4 team work'.

Topgun was anointed temporary detachment status and became an official detachment on 1 January 1972. This meant that the school could now have its own requisitions, and was no longer dependent on VF-121. On 21 July that same year, Topgun became a separate command, under the leadership of Cdr Roger Box.

Ronald 'Mugs' McKeown, shown here in his Admiral's dress blues, was an important player in discovering the limits of the Phantom II against the MiGs and, while at VX-4, worked closely with the *Have Drill* and *Have Doughnut* projects, evaluating 'captured' MiG-17s and a MiG-21. Putting all this experience to good use once he had returned to the fleet, McKeown downed two MiG-17s on 23 May 1972 while flying with VF-161 (*US Navy*)



PROVING THE POINT

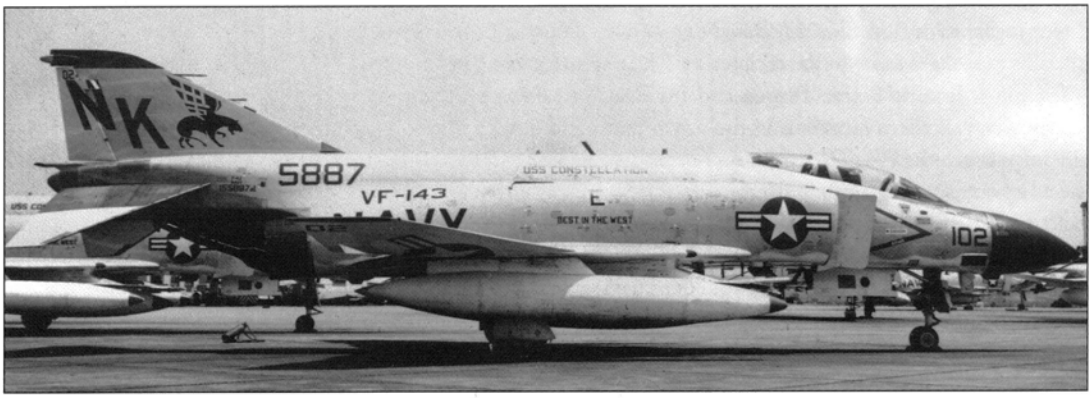
The bombing halt of November 1968 gave both sides time to reorganise their forces and re-evaluate their tactics, thereby setting the stage for the second segment of the Vietnam air war. The North Vietnamese, despite their assurances to President Johnson that they would seriously pursue peace talks, simply used the time to reinforce their air defences and brace for what they knew would be a renewed US air operation. The VPAF acquired more MiGs and expanded its air defence and GCI network south to Vinh.

The US Navy also used the time wisely, as detailed in the previous chapter, re-examining in detail its air-to-air tactics via Topgun, and deploying a new generation of electronic devices and weaponry to counter the Soviet-built SAMs and radars. This effort left many in the fleet anxiously awaiting the validation of their efforts. But that could only come through a resumed battle 'up North', which had yet to materialise.

The air war in early 1970 consisted of operations over South Vietnam and *Blue Tree* missions for the *Yankee Station* carriers. Any offensive actions against North Vietnam were prohibited – especially any attack on the MiG bases. Indeed, MiG encounters were authorised only as a self-defence measure. However, on 28 January, in a break from prior practice, a 921st Fighter Regiment MiG-21 flown by Vu Ngoc Dinh ventured into southern Laos and shot down an Air Force HH-53B helicopter of the 40th Aerospace Rescue and Recovery Squadron that was attempting to rescue the crew from a downed F-105G. All six crewmen were killed.

In March, in an effort to deter further such attacks, the Navy began experimenting with keeping its BARCAPs low, under the Vietnamese radar, and trying to pull the MiGs down the 'panhandle' to a position where they could be intercepted. On the 27th this tactic worked, for two F-4Js from VF-143 (embarked on the *Constellation*) were despatched to

CVW-14's VF-143 conducted its first *WestPac* with the F-4J between 11 August 1969 and 8 May 1970. During the cruise the unit was restricted primarily to flying bombing sorties against targets in Laos (VF-143 suffered the sole Phantom II loss of the deployment during just such a mission on 22 November 1969) and South Vietnam, and escorting RA-5Cs on *Blue Tree* photo-recce missions of North Vietnam. However, in a break from the norm, two F-4Js from VF-143 came close to downing a pair of MiG-21s on 27 March. Indeed, two Sparrow missiles were fired, but both rounds failed to find their targets. This immaculately presented Phantom II was photographed on the ramp at Miramar several weeks after VF-143 had returned home (*via Brad Elward*)



intercept two MiGs. The crews were given clearance to fire and one of the Phantom IIs launched two Sparrows, but missed.

The next day VF-142 enjoyed greater success.

BEAULIER AND BARKLEY'S MiG

The sole MiG kill claimed by US Air Forces in Vietnam between August 1968 and January 1972 fell to Lts Jerome E Beaulier and Steven J Barkley of VF-142 on 28 March 1970. In the following first-hand account, RIO Barkley describes the engagement, and his relationship with his pilot;

'Both Jerry and I were formerly enlisted (Barkley had seen brief service in the USAF), so we found ourselves several years older than most of the first-tour people. That didn't make much difference, except that our sense of humour was at a higher level. Not to say that we were always on the "up and up" in the cockpit. Beaulier and I often joke about several "divorces" during sorties, but we could never stay mad at each other ("divorced") for an entire flight.

'Being a bit older and perhaps more focused on quality and survival, our missions tended to be fairly well planned and "by our book". By this, I mean we had a set of procedures, checks and counter-checks in which we (privately) took a great deal of pride – look-out doctrine (never miss a bogie), radar search doctrine (never miss a target), equipment checks, navigation and airmanship.

'We spent a great deal of time together apart from flying, and I suppose we discussed every aspect of our various missions. We wanted to have a plan. For example, we discussed whether it was prudent to drop our tanks at the slightest provocation. Our external tanks, given the length of our missions, were necessary. Our concern was why drop the tanks if we probably won't engage? At that point in the war MiGs were almost never sighted, much less a crew would get within Sparrow range of a bandit.

'We concluded that it was more prudent to keep the tanks until the first turn of the engagement. With that kind of drag it wouldn't be tough to be below proper jettison speed for the tanks. The problem was, of course, to remain aware of your speed.

'Beaulier was a recent graduate of Topgun. His class was the first one at the school which spawned the likes of Tom Cruise! He attended Topgun while it was still in the middle hangar of Hangar One at Miramar. That was early in the genesis of Topgun, and the philosophy at the time was a mix of simply making good pilots better, and to provide Fleet units with people prepared with a recent infusion of tactics to be training officers.

'Although the squadrons more or less supported the idea of Topgun, it wasn't apparent at the time that they were ready to embrace everything that the returning warriors had to say. For example, Beaulier was awarded "NATOPS (Naval Air Training and Operating Procedures Standardisation Program) Officer" duties on his return from the course. So much for immediate assignment to Training Officer! But he had frequent opportunities to hold forth in the ready room, so some of what was absorbed at Topgun made its way to a mix of willing ears. So, in a way, Topgun was working even then, but not as some would suggest.

'It took a few years for Topgun to evolve a compelling mission statement, and even then it was a matter of personality and personal ability to make a difference at squadron level (silk purses and sow ears!).

'Certainly it was clear to everyone that speed was life in the McDonnell Phantom. The need for speed was never greater than it was for an engaged Phantom, and management of energy was paramount. That message made it from Topgun and VF-121 instructors to the squadron loud and clear, and the Crusader pilots were always willing to emphasise that point to the F-4 crews.

'My class at VF-121 was the first F-4J class for the RAG. Our class enjoyed distinctions – flights in the F-4A (really!), the F-4B and the newly-introduced F-4J. Our first flights were in the "lead nose" F-4J – without a radar. More importantly, however, our class was the first to enjoy a period of intense tactics training. Before our class, believe it or not, replacement pilots and RIOs would fly ACM now and then, but never more than a couple of flights in a row. ACM flights happened whenever "things came together". It wasn't thought prudent to pack all those flights together and get some focus on what it was all about.

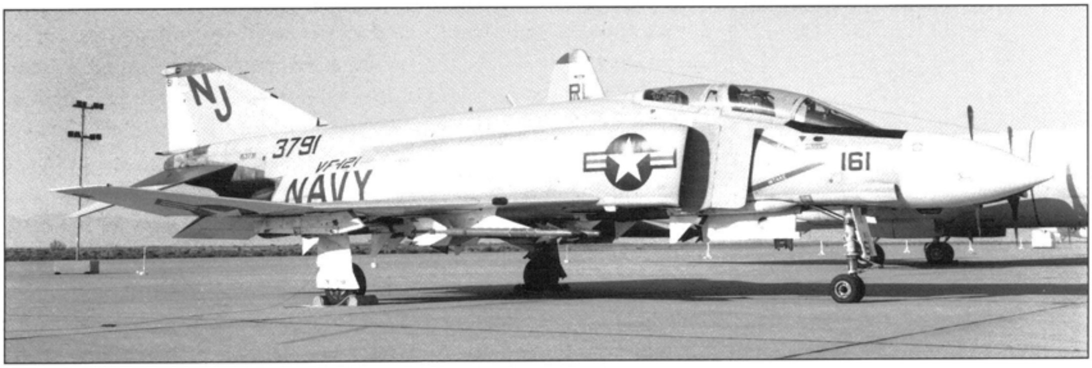
'We were given three aircraft and four instructors, and enjoyed a three-week period of ACM-only flights, interspersed with periods of classroom discussion and ACM "homework" such as mathematically describing manoeuvring "eggs" of various "g", and graphic illustrations of comparative manoeuvring by the F-4 and MiG variants. Who knows if it worked, but it did make a lot more sense than occasional ACM flights accomplishing who knows what? Thereafter, the RAG followed this approach, except the "middle hangar" at Miramar was out – Topgun grabbed it after our class finished.

'By March 1970 Jerry Beaulier and I were well into the routine of a *WestPac* cruise aboard the USS *Constellation*. The ship would sortie out of Subic Bay to Vietnam for about 30 days, followed by five or six days in the Philippines, Hong Kong or Japan. We had 15 crews flying 20 to 22 sorties a day. This translated into one or two sorties a day each, plus standing a "spare" for one sortie. The spare was meant to ensure the squadron launched the requisite number of aircraft (usually two) for each mission.

'A spare aircrew briefed, manned the aircraft, started engines and then watched their buddies launch on a terrific mission. Spare aircrews were launched when one of the main aircraft went "down". This only happened when the mission was either boring (such as BARCAP, approximately 10,000 miles from the nearest threat!), or when it was a moonless night and bad weather.

'Combine a couple of missions with a spare, plus one or two five-minute Alert spells, and you have a full day. Our flying "period" was

Future 'MiG killers' Lts Jerry Beaulier and Steve Barkley received expert tuition flying Phantom IIs with West Coast RAG, VF-121. In fact, they almost certainly logged cockpit time in this nondescript F-4J, photographed on the transient ramp at Edwards AFB during a base open house on 18 May 1969. Beaulier was participating in the very first Topgun course, run by VF-121 instructors, at the time, while Barkley was being taught by the self-same naval aviators to be a fleet-qualified RIO (*via Brad Elward*)



typically 12 hours, but Alert 5s were manned 24 hours a day. This meant that your time for Alert always came in the middle of what would appear to be prime sleeping time.

'Our sorties were mainly into Laos and South Vietnam for bombing missions – a lot of BARCAPs and occasionally a *Blue Tree* (RA-5C escort) into North Vietnam. *Blue Trees* were relatively short and invariably a non-event, as we would sweep through the North at very high airspeeds, spending only a few short minutes overland.

'There was never any defence by the North Vietnamese, apart from an occasional "paint" by a fire-control radar. We never saw a missile fired. Sorties into Laos and South Vietnam were more eventful, as they were usually flown at night, and flak (usually 37 mm) was forthcoming, especially in Laos near the North Vietnamese border. It could be easily seen at night, and there was enough to be interesting, but don't for a minute think about "30 minutes over Tokyo or Berlin". I wasn't in that war, but I'm sure our sorties were pastoral by comparison. Occasionally someone would be hit or shot down, so you didn't want to duel with what you saw.

'We were about two or three weeks into a line period when a USAF rescue helicopter was shot down in Laos by a MiG-21 staging out of the southernmost airfield in North Vietnam. This was quite unexpected, as the North Vietnamese hadn't done anything like this in some time. We were a couple of years into the "no bombing" strategy, so encounters such as these were very rare. They were probably enjoying the lack of attention, and we found it interesting that they should seemingly thumb their noses at us in this manner.

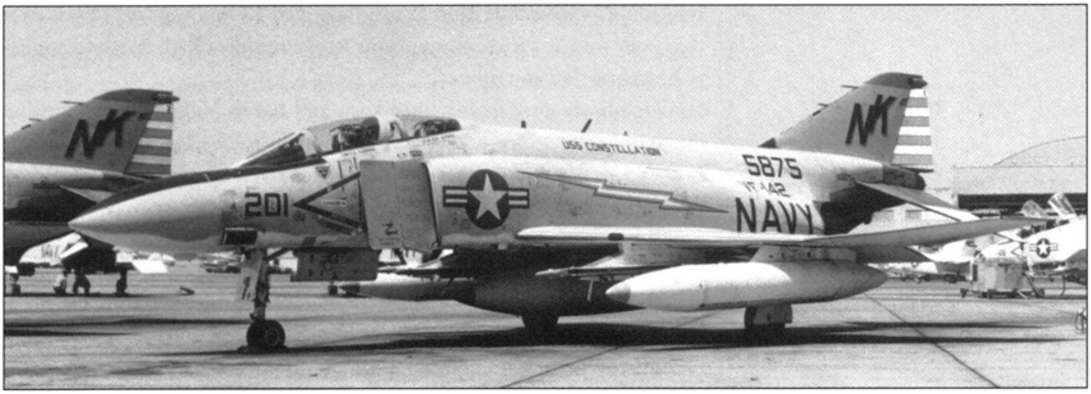
'On 27 March a two-aircraft section from our sister-squadron, VF-143 "Pukin' Dogs", was vectored towards two MiGs. Both F-4Js dumped all tanks, and one aircraft shot a couple of missiles to no avail. I'm not sure that anyone even saw an aircraft, but they were in radar range. That got everyone pumped up. "Now we were in a real shooting war", we thought. That the encounter was the first in over a year, and that the probability of another was very unlikely, was not to be thought about.

'Incidentally, the encounter left the ship short of drop tanks. One section of jets dropped tanks and the ship was short. Good thing it wasn't a real war! We despatched a couple of F-4Js to Cubi to pick up some more. That night Beau and I revisited our plan for tanks, and decided to go with our conviction to drop tanks in a fight when we got slow.

'That night too I was up late writing the flight schedule for 28 March. As Schedule Officer, I was responsible for assigning flights to everyone, including Alerts. My job was to make sure everyone got a fair share at the good flights, that pilots kept night-proficient and Alerts were evenly distributed.

'The Skipper usually reviewed the flight schedule each night. His big deal was that pilots were absolutely even in everything – he didn't keep much track of the RIOs. This meant that a few of us fire-breathing RIOs were a little more even than others.

'The schedule was posted for the 28th, and there we were standing Alert 5 during a midday launch. It didn't help that "scuttlebutt" had it that the ship would be making a fighter sweep over the North during that launch. So, Beaulier and I were destined to sit on the deck and watch our buddies launch into glory. And it was all my fault!



In an ironic twist of fate, Beaulier and Barkley used *Dakota 201* to down their MiG on 28 March 1970, this machine being assigned to VF-142 CO Cdr Ruel Gardner. The head 'Ghostrider' had in turn been been left behind on the deck of CVA-64 when his Alert 5 jet 'broke' prior to launch. Chained down over one of the waist catapults, and ready to launch within five minutes of receiving the word to go, Gardner must have realised it was not going to be his day when his inoperable F-4J was towed out the way so that Beaulier and Barkley could take off in his place . . . in his jet! *Dakota 201* was photographed at Miramar in the late summer of 1970 – note the 'MiG killer' marking near the base of the splitter plate (*via Brad Elward*)

'We manned up for the Alert 5 (in BuNo 155875/NK 201, callsign *Dakota 201*) while the rest of our buddies were manning their aircraft for the scheduled launch. We didn't always start the aircraft at the change of Alert crews, but Beaulier decided he wanted to start up and await the launch with engines running. The Plane Captain cranked the "huffer" (external starter), and we started up and began pre-flight checks.

'Meanwhile, our CO (Cdr Ruel Gardner) and his RIO (Ed Scudder), were spotted on the waist cat and were having trouble getting started. At this point I recall hearing indications on the radio that something was up. We had switched to the CAP frequency and were hearing chatter that led us to believe that, impossibly, the scuttlebutt was right. MiGs were airborne and were being tracked! We quickly switched back to the launch frequency and scanned the deck.

'Gardner and Scudder hadn't started yet, and the rest were beginning preflight checks. Things looked reasonable for our launch, as we were started and ready to go. The next thing we heard over the flightdeck loudspeaker was, "Launch the Alert 5".

'Our attention went up several notches. Gardner was on the catapult, but something wasn't right. The flightdeck crew immediately moved the aircraft off the waist catapult and signalled us to begin to taxy to catapult three on the waist. With the precision borne of a thousand launches, our aircraft was quickly moved into position and made ready for an immediate launch. The nose kicked up and the Catapult Officer gave Beaulier the signal for full power, then afterburners. Everything looked good, and Beaulier gave me an assurance that he was signalling for a launch.

'With a snappy salute from the Cat Officer, the aircraft moved from zero to 140 kts in less than two seconds and we were airborne. We left the ship with two wing tanks, a centreline tank, full internal fuel plus two Sparrows and three AIM-9Ds.

'After the usual VFR departure from *Constellation*, we began an outward track toward *Red Crown* which, on that day, was the USS *Horne*, about 50 miles north-west of the carrier. As other aircraft were being launched, we were instructed to circle as they caught up and radar status was checked. Our radar was fine, and the missiles were okay except for the Number 1 Sidewinder, which was approximately 30 mils off centreline.

'Two F-4Js showed up, crewed by Cdr Paul Speer (the Commander Air Group, or CAG for short) with Lt(jg) John Carter, and Lt Cdr Paul Hakanson with Lt(jg) Dave Van Asdlen. Dave reported his radar was down, and John said his was okay. Hakanson and Van Asdlen were instructed to maintain an orbit in reserve. We joined CAG's aircraft to form the section, which was immediately given a vector: "Vector 273 for bandits at 43 miles".

'CAG Speer (whose fighter experience went back to Korea and three F-8 Crusader tours of Vietnam, and included a MiG-17 kill whilst CO of VF-211 on 19 May 1967) took the lead and we began to close on the coast. Our controller (Petty Officer White) kept us appraised of what was going on: "Bandits at 25 miles, you're cleared to fire. 21 miles, and they've dropped their tanks". It's worth wondering how he knew this, but it would be a pretty good guess to conclude that someone was monitoring their frequency. Either that, or White had some really good binoculars!

'All aircraft were accelerating, and the closure speed was probably greater than 1000 (nautical) mph, so information was useless almost immediately, but White was really doing his stuff. He sounded cool, calm and organised. I was desperately looking for a radar contact as we crossed the beach – then the radar died! I fought it for five miles and then gave up. This was no place for Built-In Tests! I was really disappointed – the perfect set-up for a head-on shot, and no radar! I went heads-up as we were about to go into a fight, and the radar problem could be sorted out later.

'By this time our section was really "hauling the mail". We were in the neighbourhood of 550 kts, and had moved down to about 12,000 ft as White had estimated the MiGs' altitude at about 20,000-22,000 ft. CAG was north of us about a mile, and we were stepped down 2000-3000 ft from him. We still had our tanks, since significant fuel remained, plus we were being "cheap" about our tanks.

'Beaulier got first sight of the MiGs (and so took over the lead in the engagement) as they "flew" out of the canopy bow at one o'clock. He called the sightings and a turn into the MiGs at two o'clock and 22,000 ft, beginning a right-hand climbing turn into the bandits, who apparently didn't see us. Someone in our aircraft commented, "They don't see us!" Neither Beaulier nor myself will admit to making that call, but somebody did and, as you might expect, that's all it took for both MiGs to see us and begin aggressive manoeuvring.

'The fight began with our nose on the MiGs as they crossed in front of us, left to right. CAG was "sucked" (behind us) and trailing us about two miles back. The MiGs turned right into us and began a vertical manoeuvre down into us as they split into singles from the "fighting wing" formation they were maintaining. We turned right into the nearest MiG and kept a visual on the second aircraft, beginning our turn at about 18,000 ft and pulling 5g as we chased the lead MiG through a 360-degree turn.

'The F-4 rapidly lost energy through one of these manoeuvres, especially with the three tanks that we were still dragging. As we struggled through the 90 degrees of turn, our airspeed was 400 kts, and appropriate for you know what! So Beaulier's trusty RIO called "Tanks" when the speed was right, and off went the wing tanks as planned. We kept the centreline tank, as we were still transferring fuel. I've often wondered what the MiGs thought when they saw a jet calmly jettison tanks in the middle of a life or death fight. Did they think we were organised, or just nuts?

'Anyway, we were now fighting for airspeed to keep up with the MiGs, who were now joining up as a fighting wing again (can you believe it?). As

Dakota 201 accelerates down waist cat four in full afterburner at the start of yet another sortie during 'Connie's' 1969-70 _WestPac_. Written off when it suffered an in-flight engine fire on 26 April 1973, Beaulier and Barkley's 'MiG killer' served exclusively with VF-142 during its four-year career with the Navy (_via Peter Davies_)

they joined up, somehow they were head-on with CAG Speer, who was out of phase with us and the MiGs, and coming from the opposite direction! The lead MiG launched an "Atoll" at CAG. Remember, this was not CAG's first real fight, but it was certainly John Carter's baptism of fire, and John was focused.

'He saw the "Atoll" launch and called CAG's attention to it, probably in a near-falsetto voice. CAG saw the launch (a big puff of smoke) and the missile leave the MiG. His response to Carter's frantic call was, "No chance". He never varied his course one degree, and the missile passed harmlessly. That's experience!

'The MiGs then split up again, one going left and the other right. We followed the right-turning one and kept a visual on the second MiG, who passed from right to left at our six o'clock as we turned right, chasing the lead aircraft. Beaulier was onto him, and my responsibility was to track the remainder of the fight. I followed the second MiG through our six, and then it turned west and disappeared, with CAG in close pursuit.

'They chased it nearly to Hanoi and then turned back – Cdr Speer was a little late in noticing that the MiG had lit afterburner and dived for home. Alone over enemy territory, and overcast, he heard several SAM warnings and broke off the engagement. Carter, who thought he had a good radar, could never get contact with the MiG. After they were "feet wet" and tanking, he discovered that the radar had an effective range of one mile! What a great radar we had in the F-4J!

'It was later suggested that Speer might have been able to get the MiG because controllers aboard the *Constellation* had been told that the jet was about to run out of gas. This message, however, was not relayed to CAG for fear that it might be intercepted and compromise the fact that we were monitoring voice communications between the MiGs and their controllers.

'Beaulier and I were lagging our descending MiG about 40 degrees when he apparently lost sight of us and reversed his course. Jerry quickly corrected his turn and put our Phantom at the MiG's dead six o'clock, with Sidewinder selected. Of course, the first Sidewinder to come up was the one with 30 mils offset from centreline. He had checked this earlier and anticipated the correction, which he made.

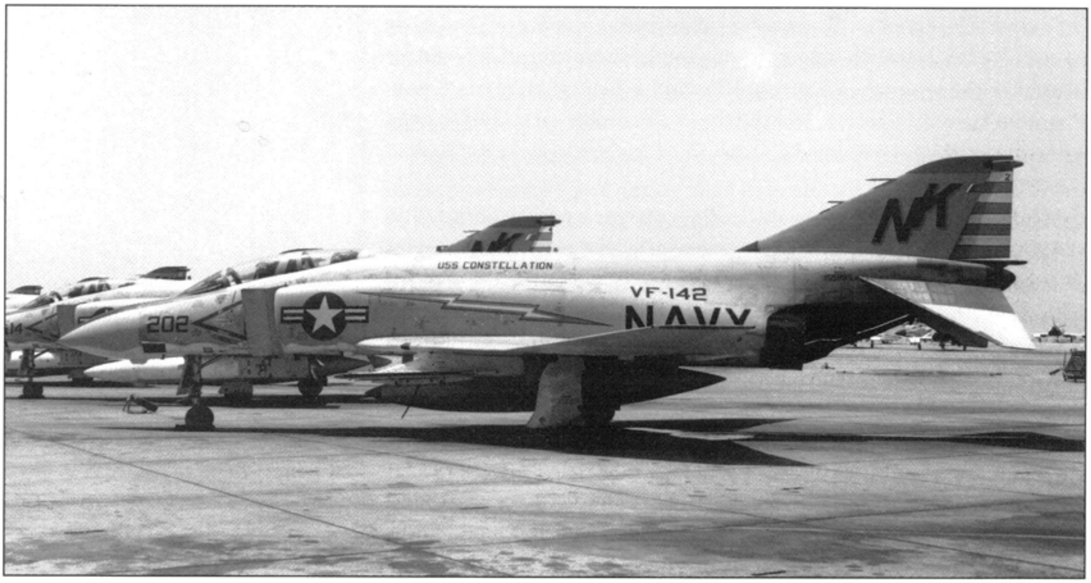
'With the Sidewinder furiously buzzing, we fired the first missile at the MiG's dead six o'clock at approximately half a mile. It hit the MiG's tailpipe and exploded. With the second Sidewinder now howling, I suggested maybe a second shot might be in order, so we shot it and there was another explosion on the MiG, which was now engulfed in a fireball from the leading edge of the wing backwards. The nose and canopy were visible in front of the fireball. We pulled up at the MiG's four o'clock and took a look as the doomed aircraft descended into the cloud below us. We never saw an ejection.

'One point I always make to younger fighter crews is that looking at a stricken aeroplane is possibly the worst thing you can do, as well as the most difficult to ignore. The first kill only happens once, and it's nearly impossible not to want to sneak a peek. My point is that unless someone has given absolute assurance that there is only one bandit airborne (an unlikely assurance), your self-congratulatory stare at your own handiwork is just asking for it. We weren't that smart, so we looked and looked some more. Then it was time to get out of town, and where was CAG?

'We decided we weren't going to circle Thanh Hoa looking for him, so I gave Beaulier a vector and we hauled ass. Almost immediately we were feet wet and were vectored to a tanker for refuelling – the same KA-3B that CAG and Carter eventually joined.

'Beaulier and I were jubilant about our recent good fortune, and looking forward to getting back to the ship to begin the fun of telling what happened. We, of course, felt that heroes such as ourselves would get the King's treatment, with a red carpet extending 50 miles behind the ship. That wasn't the case, however.

F-4J BuNo 155885 served alongside *Dakota 201* for much of its time with VF-142. Near-identically marked, the still factory-fresh fighter was seen at Miramar on 2 August 1969 – the jet had only been delivered to the navy by McDonnell Douglas the previous April. VF-142 commenced its fifth wartime *WestPac* nine days after this photograph was taken (*via Brad Elward*)



'*Constellation* was still fighting a war, and our MiG didn't warrant any change in the flight schedules. We were told to "delta" for an hour and ten minutes until the next scheduled recovery. Can you imagine the effrontery? Telling two red-blooded heroes to just wait? Of course we waited, and recovered, with Beaulier taking credit for an underlined three wire trap – best you can get! And it was the best day we ever had.

'The F-4J, with all its foibles, was a great machine which, although not as nimble as the MiG-21, could be properly fought, as many MiG drivers learned to their misfortune. The aircraft has now gone, but Beaulier and I can proudly remember the day we grabbed the brass ring over Thanh Hoa in the Phantom.'

There was little air activity in the North as 1970 came to a close, although US troop withdrawals continued. *Blue Tree* missions were still being flown as well, drawing occasional fire from North Vietnamese troops and air defences. On 3 November, fearing that the North Vietnamese were attempting to expand their intricate SAM network into Laos, air force strikes were launched against SAM sites being constructed near the Mu Gia and Ban Karai passes, which led to the Ho Chi Minh Trail.

Undoubtedly the highlight of the year for the air war was the 28 March encounter, which went a long way towards proving that Topgun had worked.

CONCLUSIONS OF WAR

The *Rolling Thunder* campaign will long stand as a major event in the annals of military aviation history. Even though it was primarily a bombing effort aimed at reducing the North's will to fight, and its ability to support the communist insurgency forces in the South, the war saw a significant amount of air-to-air combat as VPAF MiGs sought to disrupt American strike packages.

If anything, the war taught the US that its air warfare policy and equipment needed to be upgraded and improved, and that missile technology of the period was not the 'end-all' to aerial dogfighting as had been promised. The Phantom II, though a phenomenal interceptor, had to be re-evaluated as a close-in fighter, relying on the short-ranged Sidewinder instead of the long-range Sparrow III – and it needed an internal gun. Phantom II crews, likewise, had to relearn air combat tactics, which was something only the F-8 community seemed to appreciate at the start of the 1960s.

While statistics can often be misleading, no true coverage of the 1965 to 1970 aerial battles can be complete without at least presenting them for discussion. From the Navy's standpoint, F-4 units were officially credited with 12 VPAF MiGs, one Communist Chinese MiG and two VPAF An-2 cargo aircraft during *Rolling Thunder* and into 1970 – a further two MiG kills have since been recognised. In return, five (and possibly as many as seven) Phantom IIs were lost – four (or six) to the VPAF and one to the Communist Chinese.

Computing the official figures, Navy Phantom IIs tallied a 3.25-to-1 kill ratio versus VPAF MiGs and, if the 9 April 1965 engagement with the Chinese is included, that overall ratio becomes 2.8-to-1. Adding in the two An-2s modifies this number further to 3.2-to-1. As one can see, regardless of the numbers used to form the ratio, the results were not encouraging, nor were they in line with historical figures experienced in World War 2 or in Korea.

The F-8 community faired somewhat better, officially downing 18 VPAF MiGs while losing only three F-8s, thus yielding a kill ratio for 1965 to 1970 of 6-to-1. Combining these figures for all Navy fighter aircraft (excluding the PRF and An-2 engagements) yields a ratio of 4.43-to-1. During the same period Air Force F-4s claimed 59 MiGs at the cost of 15 Phantom IIs for a ratio of 3.93-to-1. Adding the F-105 engagements changes this to 2.02-to-1 (87 MiGs downed versus 43 USAF fighters destroyed). As with the Navy numbers, those accumulated by the USAF fell below historical figures.

In John Nash's words, '*Rolling Thunder* was another phase in Vietnam which was hardly discernible from the others. The combat was serious AAA, SAMs and lots of bombing for the F-4s. *Everybody* got some exposure to real, "no-joke, look-them-in-the-eye combat". That experience has a lasting effect on the individual and to a lesser extent on naval aviation'.

Indeed, Nash's words can be seen by the number of pilots that went on to make the Navy their career post-war, and moved into prominent positions as captains and admirals. Topgun legends Pederson, Ruliffson, Nash and Holmes all went on to command their own squadrons and became Navy captains, while MiG-killers Hickey and Davis eventually attained admiral rank.

It was these men who saw combat, and the consequence of bureaucratic short-sightedness at first hand, who formed the mentality of today's naval aviation.

Just how much these lessons – and the US military's ability to learn from them and implement the new doctrines – impacted the Cold War during the late 1960s and 1970s may never fully be appreciated. But this much can be said. Virtually all of the equipment and most of the tactics employed by the VPAF were of Soviet and Communist Chinese origin.

Aside from the fighters themselves, the complex GCI system (described by many as the most sophisticated in the world until that faced by the US and Coalition allies over Iraq in 1991 during Operation *Desert Storm*) was also based on Soviet design, and was often controlled by Soviet 'advisors'.

Even in a limited sense, with their proverbial hands tied, US Navy aircraft performed well against the GCI network, be it the MiGs, SAMs or radar-guided AAA. All of these systems were of the type that US forces, and those of its NATO allies, would face in the event of a major war in Europe. The Soviets must have realised that their systems and tactics were faulty, if not of limited value against the Americans and the western nations.

Had US Air Forces, or the military for that matter, been permitted to run the campaign as they saw fit, rather than constrained by political necessity, it is likely that the MiGs would have played a much less significant role in the overall war, as tactics would have been modified and the fighter bases actively attacked from day one.

Many aircrews lost their lives or were captured during *Rolling Thunder*, a number of whom had fallen victim unnecessarily to VPAF MiGs.

APPENDICES

APPENDIX A

US NAVY F-4 PHANTOM II MiG KILLERS 1965-70

Date	Squadron	BuNo	Crew	Carrier/Air Wing	Aircraft	Weapon
9 April 1965	VF-96	151403	T Murphy R Fegan	*Ranger*/CVW-9	MiG-17	AIM-7
17 June 1965	VF-21	151488	L Page J C Smith	*Midway*/CVW-2	MiG-17	AIM-7
17 June 1965	VF-21	152217	J Batson R Doremus	*Midway*/CVW-2	MiG-17*	AIM-7
6 Oct 1965	VF-151	150634	D MacIntyre A Johnson	*Coral Sea*/CVW-15	MiG-17	AIM-7
13 July 1966	VF-161	151500	W McGuigan R Fowler	*Constellation*/CVW-15	MiG-17	AIM-9
24 April 1967	VF-114	153000	C Southwick J Laing	*Kitty Hawk*/CVW-11	MiG-17	AIM-9
24 April 1967	VF-114	153037	H Wisely G Anderson	*Kitty Hawk*/CVW-11	MiG-17	AIM-9
10 Aug 1967	VF-142	152247	G Freeborn R Elliot	*Constellation*/CVW-14	MiG-21	AIM-9
10 Aug 1967	VF-142	150431	R Davis G Elie	*Constellation*/CVW-14	MiG-21	AIM-9
26 Oct 1967	VF-143	149411	R Hickey J Morris	*Constellation*/CVW-14	MiG-21	AIM-7
30 Oct 1967	VF-142	150629	E Lund J Borst	*Constellation*/CVW-14	MiG-17	AIM-7
9 May 1968	VF-96	153036	J Heffernan F Schumacher	*Enterprise*/CVW-9	MiG-21**	AIM-7
10 July 1968	VF-33	155553	R Cash J Kain	*America*/CVW-6	MiG-21	AIM-9
28 Mar 1970	VF-142	155875	J Beaulier S Barkley	*Constellation*/CVW-14	MiG-21	AIM-9

* Some years later, a second MiG-17 kill was also credited to the crew following this action

** Never officially credited by the Navy or Air Force

APPENDIX B

US NAVY FIGHTERS VERSUS THE VPAF 1965-70

Year	F-4 losses to MiGs	F-4 MiG kills	F-8 losses to MiGs	F-8 MiG kills	Navy losses
1965	1*	4***	0	0	1*
1966	0	1	3	4	4
1967	2	6	0	9	5
1968	2**	2****	0	5	3
1969	-	-	-	-	-
1970	0	1	0	0	0
TOTALS	**4 + 1***	**13***/******	**3**	**18**	**12 + 1***

* VF-96 F-4B downed by Chinese MiG-17

** A third F-4 destroyed may have been downed by his wingman

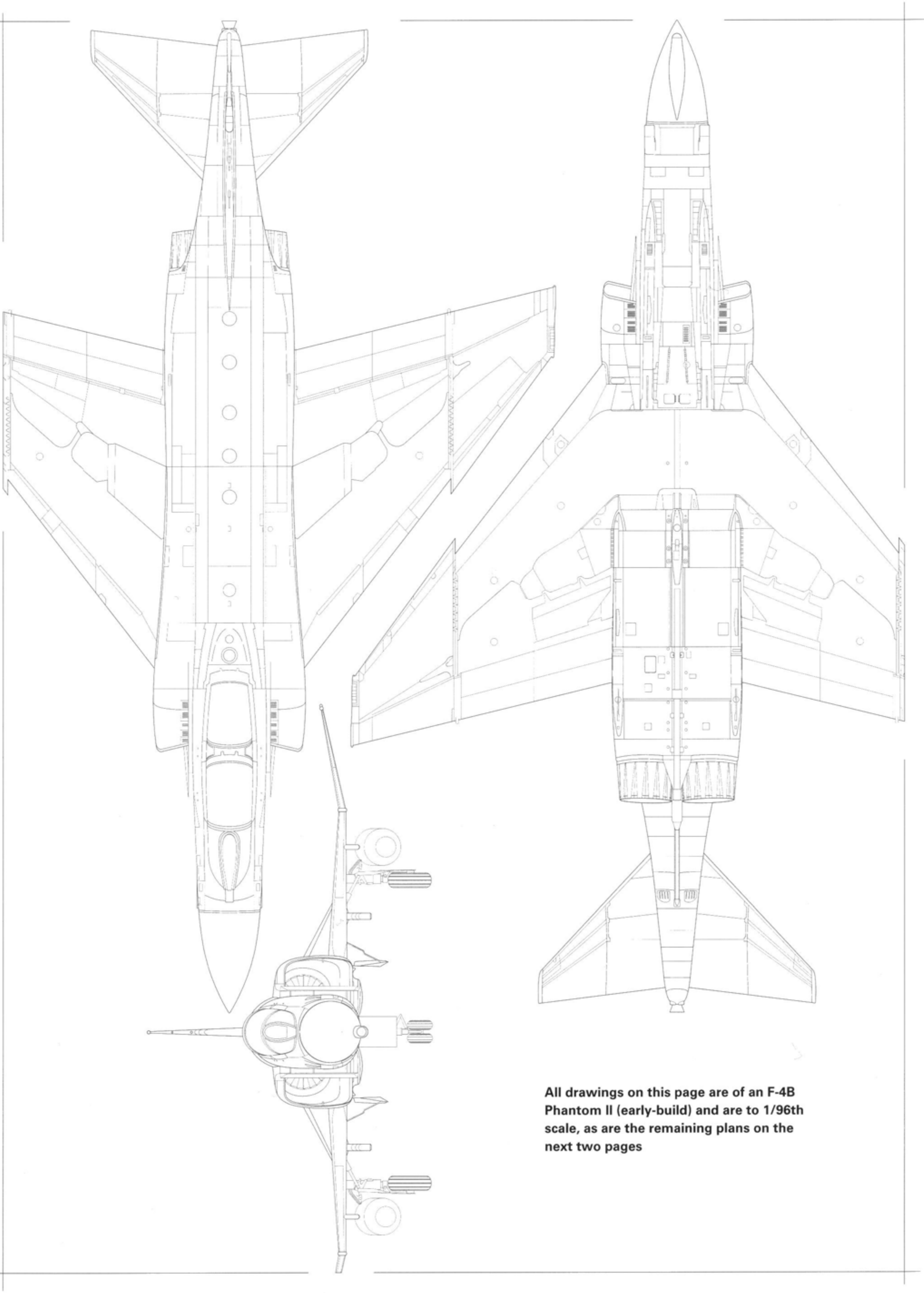
*** A third kill for VF-21 was credited some years after the war

**** VF-96's kill for this year was never officially recognised

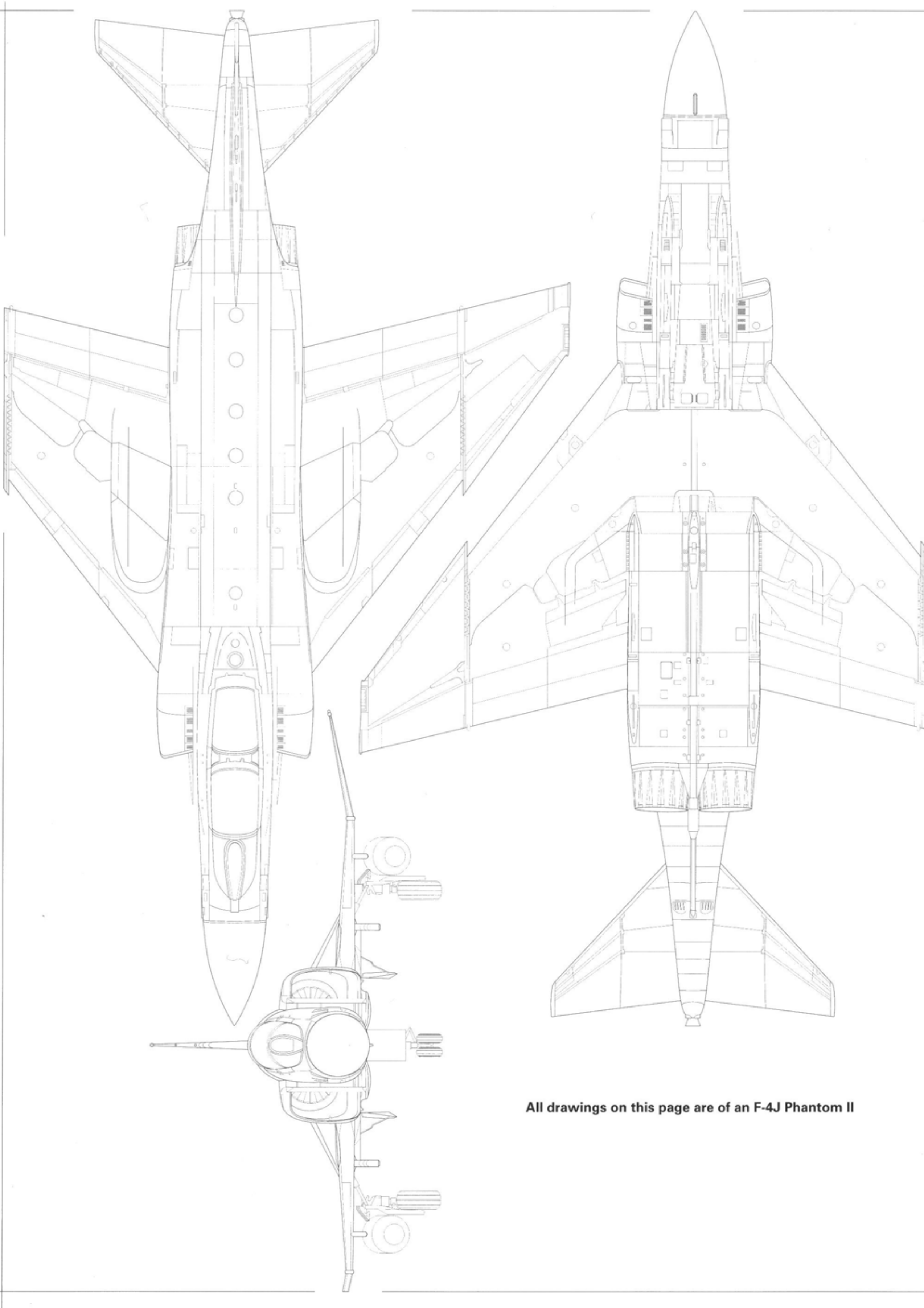
APPENDIX C

F-4 VIETNAM COMBAT CRUISES BY SQUADRON 1964-70

Squadron	Variant	Cruise	Modex	Carrier
VF-11	F-4B	6 Jun 67 to 14 Sep 67	AA 1xx	*Forrestal*
VF-14	F-4B	21 Jun 66 to 21 Feb 67	AB 1xx	*Roosevelt*
VF-21	F-4B	6 Mar 65 to 23 Nov 65	NE 1xx	*Midway*
	F-4B	29 Jul 66 to 23 Feb 67	NE 1xx	*Coral Sea*
	F-4B	4 Nov 67 to 25 May 68	NE 1xx	*Ranger*
	F-4J	26 Oct 68 to 17 May 69	NE 1xx	*Ranger*
	F-4J	14 Oct 69 to 1 Jun 70	NE 1xx	*Ranger*
	F-4J	27 Oct 70 to 17 Jun 71	NE 1xx	*Ranger*
VF-32	F-4B	21 Jun 66 to 21 Feb 67	AB 2xx	*Roosevelt*
VF-33	F-4J	10 Apr 68 to 16 Dec 68	AE 2xx	*America*
VF-41	F-4B	10 May 65 to 13 Dec 65	AG 1xx	*Independence*
VF-74	F-4B	6 Jun 67 to 14 Sep 67	AA 2xx	*Forrestal*
VF-84	F-4B	10 May 65 to 13 Dec 65	AG-2xx	*Independence*
VF-92	F-4B	5 Aug 64 to 6 May 65	NG 2xx	*Ranger*
	F-4B	26 Oct 65 to 21 Jun 66	NG 2xx	*Enterprise*
	F-4B	19 Nov 66 to 6 Jul 67	NG 2xx	*Enterprise*
	F-4B	3 Jan 68 to 18 Jul 68	NG 2xx	*Enterprise*
	F-4J	6 Jan 69 to 2 Jul 69	NG 2xx	*Enterprise*
	F-4J	10 Apr 70 to 21 Dec 70	NG 2xx	*America*
VF-96	F-4B	5 Aug 64 to 6 May 65	NG 6xx	*Ranger*
	F-4B	26 Oct 65 to 21 Jun 66	NG 6xx	*Enterprise*
	F-4B	19 Nov 66 to 6 Jul 67	NG 6xx	*Enterprise*
	F-4B	3 Jan 68 to 18 Jul 68	NG 6xx	*Enterprise*
	F-4J	6 Jan 69 to 2 Jul 69	NG 1xx	*Enterprise*
	F-4J	10 Apr 70 to 21 Dec 70	NG 1xx	*America*
VF-102	F-4J	10 Apr 68 to 16 Dec 68	AE 1xx	*America*
VF-114	F-4B	19 Oct 65 to 13 Jun 66	NH 4xx	*Kitty Hawk*
	F-4B	5 Nov 66 to 20 Jun 67	NH 2xx	*Kitty Hawk*
	F-4B	18 Nov 67 to 28 Jun 68	NH 2xx	*Kitty Hawk*
	F-4B	30 Dec 68 to 4 Sep 69	NH 2xx	*Kitty Hawk*
VF-114 (cont.)	F-4J	6 Nov 70 to 17 Jul 71	NH 2xx	*Kitty Hawk*
VF-142	F-4B	5 May 64 to 1 Feb 65	NK 2xx	*Constellation*
	F-4B	10 Dec 65 to 25 Aug 66	NK 2xx	*Ranger*
	F-4B	29 Apr 67 to 4 Dec 67	NK 2xx	*Constellation*
	F-4B	29 May 68 to 31 Jan 69	NK 2xx	*Constellation*
	F-4J	11 Aug 69 to 8 May 70	NK 2xx	*Constellation*
VF-143	F-4B	5 May 64 to 1 Feb 65	NK 3xx	*Constellation*
	F-4B	10 Dec 65 to 25 Aug 66	NK 3xx	*Ranger*
	F-4B	29 Apr 67 to 4 Dec 67	NK 3xx	*Constellation*
	F-4B	29 May 68 to 31 Jan 69	NK 3xx	*Constellation*
	F-4J	11 Aug 69 to 8 May 70	NK 3xx	*Constellation*
VF-151	F-4B	7 Dec 64 to 1 Nov 65	NL 1xx	*Coral Sea*
	F-4B	12 May 66 to 3 Dec 66	NL 1xx	*Constellation*
	F-4B	26 Jul 67 to 6 Apr 68	NL 1xx	*Coral Sea*
	F-4B	7 Sep 68 to 18 Apr 69	NL 1xx	*Coral Sea*
	F-4B	23 Sep 69 to 1 Jul 70	NL 1xx	*Coral Sea*
VF-154	F-4B	29 Jul 66 to 23 Feb 67	NE 4xx	*Coral Sea*
	F-4B	4 Nov 67 to 25 May 68	NE 1xx	*Ranger*
	F-4J	26 Oct 68 to 17 May 69	NE 2xx	*Ranger*
	F-4J	14 Oct 69 to 1 Jun 70	NE 2xx	*Ranger*
	F-4J	27 Oct 70 to 17 Jun 71	NE 2xx	*Ranger*
VF-161	F-4B	12 May 66 to 3 Dec 66	NL 2xx	*Constellation*
	F-4B	26 Jul 67 to 6 Apr 68	NL 2xx	*Coral Sea*
	F-4B	7 Sept 68 to 18 Apr 69	NL 2xx	*Coral Sea*
	F-4B	23 Sep 69 to 1 Jul 70	NL 2xx	*Coral Sea*
VF-213	F-4B/G	19 Oct 65 to 13 Jun 66	NH 1xx	*Kitty Hawk*
	F-4B	5 Nov 66 to 20 Jun 67	NH 1xx	*Kitty Hawk*
	F-4B	18 Nov 67 to 28 Jun 68	NH 1xx	*Kitty Hawk*
	F-4B	30 Dec 68 to 4 Sep 69	NH 1xx	*Kitty Hawk*
	F-4J	6 Nov 70 to 17 Jul 71	NH 1xx	*Kitty Hawk*

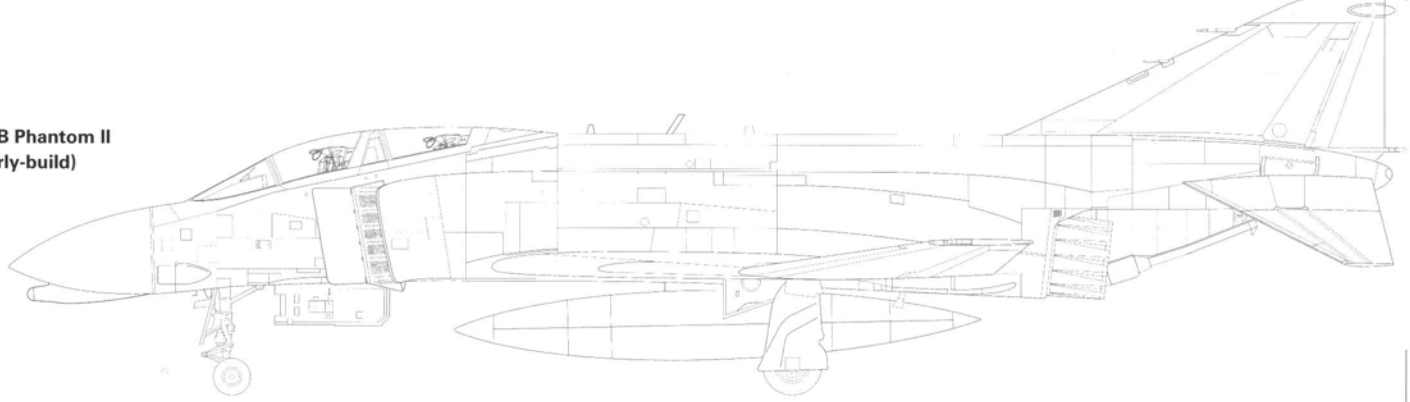


All drawings on this page are of an F-4B Phantom II (early-build) and are to 1/96th scale, as are the remaining plans on the next two pages

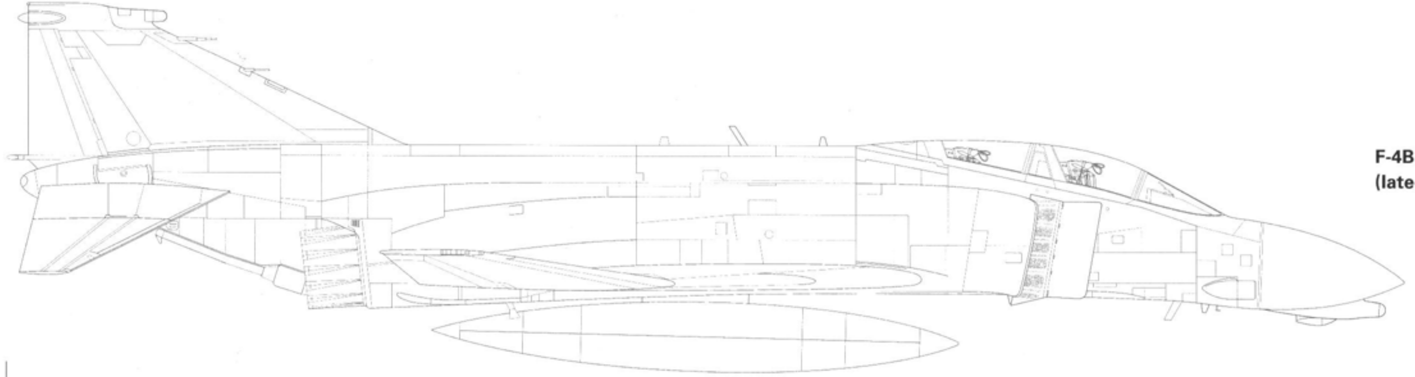


All drawings on this page are of an F-4J Phantom II

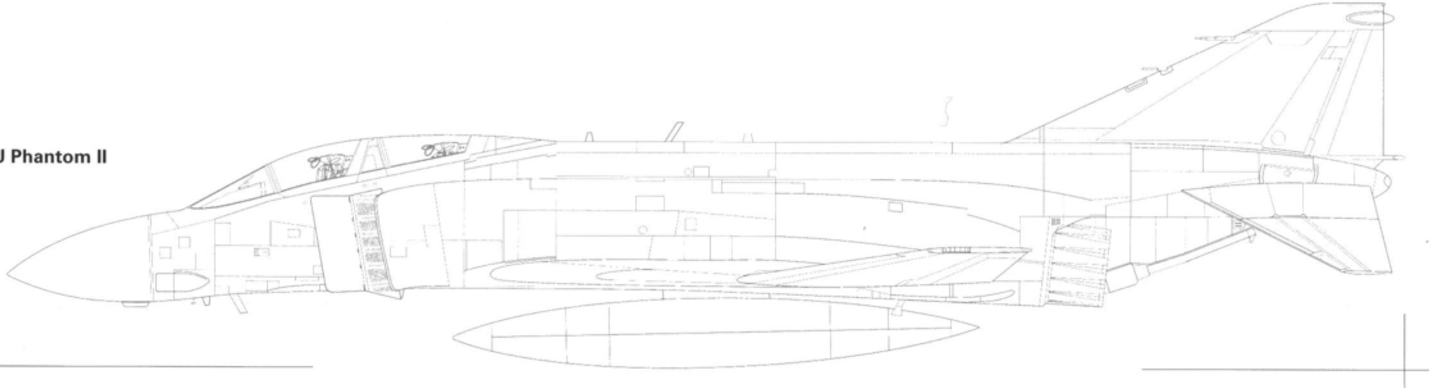
F-4B Phantom II
(early-build)



F-4B Phantom II
(late-build)



F-4J Phantom II



COLOUR PLATES

1

F-4B BuNo 151403/NG 602 of Lt(jg) Terrence M Murphy and Ens Ronald J Fegan, VF-96, USS *Ranger*, 9 April 1965

This Phantom II was accepted by the Navy at McDonnell's St Louis, Missouri, plant on 11 September 1963 and transferred to VF-21 at NAS Miramar exactly one week later. A participant in the unit's first *WestPac* with the F-4B (from 8 November 1963 to 31 May 1964), BuNo 151403 spent six months on deployment with CVW-2 aboard the *Midway*. Passed on to VF-96 on 9 June 1964, the fighter remained with the 'Fighting Falcons' until lost in action during an engagement with communist Chinese MiG-17s over Hainan Island on 9 April 1965. BuNo 151403 had completed just 430 flight hours.

2

F-4B BuNo 152219/NE 102 of Lt Jack E D Batson and Lt Cdr Robert B Doremus, VF-21, USS *Midway*, 17 June 1965

Accepted by the Navy on 19 January 1965, this aircraft was assigned to Miramar-based fleet squadron VF-21, and accompanied the unit on its *WestPac* deployment aboard the *Midway*, commencing on 6 March 1965. The highlight of BuNo 152219's 144 days on the line was its 'MiG killing' sortie of 17 June. Although VF-21 and CVA-41 returned home in November, BuNo 152219 remained in-theatre when it was transferred to MCAS Iwakuni, Japan, for use by VMFA-513 (with whom it served for just three days) and then VMFA-323. In turn passed on to VF-96 (and given the modex NG 603) on 8 June 1966, the jet was lost on 12 February 1967 when its pilot became disorientated during air intercept and ACM training whilst on a CAP mission from *Enterprise*, then on *Yankee Station*. *Showtime 603's* crew, Lt Cdr Martin J 'Marty' Sullivan and Lt(jg) Paul V Carlson, were conducting mock combat with squadron CO, Cdr Sheldon O 'Lefty' Schwartz and Lt Cdr Dean E Nordell over the South China Sea at the time of the accident – neither Sullivan or Carlson survived the crash. BuNo 152219 had amassed 876 flight hours.

3

F-4B BuNo 151488/NE 101 of Cdr Louis Page and Lt John C Smith, VF-21, USS *Midway*, 17 June 1965

Accepted by the Navy on 2 July 1964, and passed on to VF-213 two weeks later, this jet was in turn transferred to Pacific Fleet RAG VF-121 on 26 August. Sent to NAS Atsugi, Japan, on 17 March 1965, BuNo 151488 was take on strength by VMFA-542. Its aircraft history card indicates that the fighter stayed with this unit until 14 October, although published reports state that it was used by VF-21 to down the Navy's first VPAF MiG of the war on 17 June. Sticking with the history card, BuNo 151488 was passed on to VMFA-513 at Iwakuni in mid-October 1965, and from there returned to Miramar in early January 1966 for service with VF-21. Participating in the unit's second wartime *WestPac* (on the *Coral Sea*) in 1966-67, the fighter saw further flying with the Marines between February and April 1967 from MCAS El Toro, California. Following this brief stint with VMFA-122, BuNo 151488 returned to Miramar, and VF-21, for three months, and then joined VF-161 in time for the squadron's 1967-68 *WestPac* aboard the *Coral Sea*. On 17 November the aircraft was lost near Hanoi while en route to a flak suppression mission when its crew, Cdr W D McGrath and Lt R G Emrich, either stalled the Phantom II and spun out of control or were caught in a heavy AAA barrage while taking SAM evasive manoeuvres below 6000 ft. Both men were killed in the subsequent crash. BuNo 151488 had amassed 1161 flight hours.

4

F-4B BuNo 150634/NE 107 of Lt Cdr Dan MacIntyre and Lt(jg) Alan Johnson, VF-151, USS *Coral Sea*, 6 October 1965

One of 27 F-4Bs initially issued to the USAF to equip its first Phantom II unit (the 4453rd Combat Crew Training Wing) in 1962, this aircraft served with the Air Force as 62-12174 until returned to the Navy once sufficient F-4Cs had been delivered. Following its successful MiG engagement of 6 October 1965, BuNo 150634 saw further action at the very end of VF-41's sole Vietnam cruise, aboard the *Independence*, in November-December 1965. Passed on to VF-92 early the following year, it remained in-theatre with the unit aboard the *Enterprise* until CVN-65 returned home in June. Two months later BuNo 150634 was transferred to VF-121. The 12th of 228 B-models upgraded to F-4N specification by the Naval Air Rework Facility (NARF) at NAS North Island, California, between 1972-76, this aircraft served with VF-151 as NF 207 from 1973. The unit was part of CVW-5, forward-deployed to NAS Atsugi, in Japan, and assigned to the *Midway*. When VF-151, and sister-squadron VF-161, transitioned to F-4Js in early 1977, BuNo 150634 was duly retired to the Military Aircraft Storage and Disposition Center (MASDC) at Davis-Monthan AFB, in Arizona, on 8 July 1977. It had completed 3370 flight hours. The veteran jet remained in Arizona until 22 June 1983, when it was moved by road to Indian Springs Air Force Auxiliary Field, Nevada, to see out its final days as a range target.

5

F-4B BuNo 151500/NL 216 of Lt William M McGuigan and Lt(jg) Robert M Fowler, VF-161, USS *Constellation*, 13 July 1966

Starting its naval career with VF-21 on 4 September 1964, and participating in the first weeks of the unit's 1965 *WestPac* aboard the *Midway*, this Phantom II was transferred to VF-151, via NAS Cubi Point, in the Philippines, in late May. BuNo 151500 was subsequently passed on to sister-squadron VF-161 on 5 May 1966, and departed with CVW-15 on 'Connie's' second Vietnam War *WestPac* exactly one week later. Remaining in-theatre when CVA-64 returned to California in November, the jet spent four months at NAS Atsugi undergoing routine maintenance before being issued to VMFA-314 in May 1967. Flying from Da Nang and then Chu Lai, the Phantom II was transferred to VMFA-115 on 19 December and was eventually lost to AAA on the night of 23 May 1968 during an air support mission over South Vietnam. Both crewmen managed to successfully eject, and were quickly rescued by a US Army helicopter. BuNo 151500 had completed 908 flight hours.

6

F-4B BuNo 153019/NH 110 of Lt David McCrea and Ens David Nichols, VF-213, USS *Kitty Hawk*, 20 December 1966

Accepted by the Navy at McDonnell's St Louis plant on 5 May 1966, this aircraft was issued new to VF-213 on 29 July and embarked with the unit on the *Kitty Hawk* on 5 November for the 'Black Lions'' second (of six) *WestPacs*. It went on to complete a further two combat cruises with CVW-11/CVA 63 prior to its transfer to VF-121 on 29 December 1969. Remaining with the RAG until 17 March 1971, BuNo 153019 then joined VF-111 and participated in its fourth *WestPac*, aboard the *Coral Sea* – a fifth combat cruise followed in 1973. Transitioning to the F-4N in mid-1974, VF-111 duly passed BuNo 153019 on to VMFA-531 at MCAS El Toro, California, in October. The veteran jet was sent to the NARF at NAS North Island in March 1975, where it remained in cocooned storage until converted into an N-model as part of Project *Beeline* between June and September 1976 – it was the 198th F-4B to be upgraded. The newly-configured fighter was issued to reserve-manned VF-201 at NAS Dallas on 23 May 1977, and it continued to serve with the Texas-based unit until transferred to VF-171 at NAS Key West, Florida, on 10 February 1984. Stricken from the inventory two weeks later, having completed 3811 flight hours, BuNo 153019 has guarded the gate at the Florida naval air station since October 1984. It is the sole survivor of the 16 Navy F-4s to have claimed a victory during the *Rolling Thunder* campaign.

Although the fighter's An-2 kill was credited to Lt David McCrea and Ens David Nichols, it could so easily have fallen to VF-213's John Nash, then a young first tour lieutenant;

'We flew out sorties every day, and at nights there was always Alert 5 (two F-4Bs with crews strapped in, ready for take-off at five minutes' notice). On my first cruise the longest period of sleep I had was four-and-a-half hours. You could fly two or three times a day and, with the limited numbers of pilots we had, you'd have an Alert 5. This was two hours in the cockpit, in flight gear, on the catapult. I went up one night to relieve a guy called Dave McCrea. Our stateroom was close to the forward wardroom, so I said to my RIO, "Let's stop and get a coffee and a couple of doughnuts". We spent about ten minutes there, and then we went to the aeroplane sitting on the cat. I beat on the side of the Phantom, woke up McCrea, and said "OK, come on down now".

'No sooner had I said that when the Air Boss came up on the speaker and said "Launch the Alert 5". In those days we had a contest to see who could get the most night traps (we were young and didn't know any better). Anyway, I said "Come on down", and he gave me the finger and said "The heck with you, I'm going to take off". So they got the aeroplane started, and the Air Boss came on the horn again and said, "Your bogie is at 350 degrees at 25, and you're cleared to fire". At that point I realised I had made a big mistake with the coffee and doughnuts.

'McCrea and Nichols launched from the carrier (at 1815 hrs) with VF-114's Wisely and Jordan, and despite marginal visibility, they soon locked on to the two bogies. As there were no other US aircraft in the area, the slow-moving plots were assumed to be hostile. They turned out to be two An-2s flying in and out of the clouds calibrating the surface-to-air radar off Than Hoa. Possibly, they were trying to drag out the alert guys too. Both aircraft were destroyed with single AIM-7Es.'

7

F-4B BuNo 153022/NH 215 of Lt H Dennis Wisely and Lt(jg) David L Jordan, VF-114, USS *Kitty Hawk*, 20 December 1966

Delivered new to VF-121 directly from the St Louis plant on 15 June 1966, this aircraft was transferred to VF-114 on 30 September 1966 and completed CVW-11's 1967-68 *WestPac*. It was passed on to VF-96 on 15 November 1967, and participated in the 'Fighting Falcons'' 1968 *WestPac* on the *Enterprise*. Transferred to Chu Lai-based VMFA-314 on 1 July 1968, following the end of CVW-9's last period on *Yankee Station* during the cruise, BuNo 153022 was written off on 11 June 1970 whilst still serving with 'Black Knights'. The fighter had been badly damaged in action on 20 May 1970 when AAA struck the port engine bay door, splitting it open. Collateral or subsequent damage was severe enough to cause the Phantom II to be stricken instead of being repaired. It had completed 1652 flight hours.

8

F-4B BuNo 153000/NH 210 of Lt Charles E Southwick and Ens James W Laing, VF-114, USS *Kitty Hawk*, 24 April 1967

Struck by flak early into its MiGCAP mission in support of a strike on Kep, BuNo 153000 nevertheless survived long enough to allow its crew to down a MiG-17 with a well-aimed Sidewinder. Minutes later Lt Southwick found that he could not transfer fuel from the jet's wing tank due to flak damage, leaving the crew with little option but to eject. Delivered to the Navy in May 1966, BuNo 153000 had enjoyed a brief spell with VF-121 prior to arriving at VF-114 on 6 July 1966. It had completed 548 flying hours by the time it was lost. This particular aircraft was one of the first F-4Bs in the fleet to be retrofitted with fin tip AN/APR-30 RHAW antennae. It lacks the under-radome antenna, however.

9

F-4B BuNo 153037/NH 200 of Lt H Dennis Wisely and Lt(jg) Gareth L Anderson, VF-114, USS *Kitty Hawk*, 24 April 1967

'Denny' Wisely used this jet to become the Navy's top scorer for the *Rolling Thunder* years of the Vietnam War. Like many B-model Phantom IIs assigned to Pacific Fleet squadrons, BuNo 153037 initially served with VF-121 following its delivery to the Navy on 20 July 1966. Transferred to VF-114, via NAS Atsugi, on 8 April 1967 as an attrition replacement for BuNo 152990 (which had been lost in an operational accident 48 hours earlier), BuNo 153037 participated in the final two months of CVW-11's second combat cruise. This deployment was a hard one for the 'Aardvarks', as the unit lost four F-4s in combat and three in operational accidents, resulting in three crewman being killed and four captured. The aircraft then briefly returned to VF-121, in October 1967, before being passed on the VF-92 in December of that same year. BuNo 153037 participated in the unit's *WestPac* with CVW-9, aboard the *Enterprise*, from January to July 1968, although it did not return to Miramar with the 'Silver Kings' at the end of the six-month cruise. Instead, it was transferred to Marine-manned VMFA-314 at Chu Lai, and it remained with this unit until written off on 16 May 1969 when its pilot over-rotated at too low a speed on take-off from NAS Cubi Point. The aircraft stalled and crashed, although the crew ejected safely. BuNo 153037 had completed 1187 flight hours prior to its destruction.

10

F-4B BuNo 152247/NK 202 flown by Lt Guy H Freeborn and Lt(jg) Robert J Elliot, VF-142, USS *Constellation*, 10 August 1967

This aircraft lasted just 11 days after shooting down a MiG-21 on 10 August 1967, the jet being struck in the starboard wing by 85 mm gunfire during a flak suppression mission near the Chap Khe highway bridge. Its crew, Cdr R H McGlohn and Lt(jg) J M McIlrath, successfully ejected and were recovered by a Navy helicopter. Three A-6As from fellow CVW-14 squadron VA-196 were also lost on this day – one to a SAM over North Vietnam and two to communist Chinese MiGs. Returning to BuNo 152247, this aircraft had been accepted by the Navy at St Louis on 20 April 1965, and issued to VF-142 48 hours later. Participating in CVW-14's 1965-66 *WestPac* aboard the *Ranger*, the fighter was well into its second combat deployment when it was lost on 21 August 1967. BuNo 152247 had amassed 1128 flight hours (much of this over Vietnam) by the time of its demise.

11

F-4B BuNo 150431/NK 210 of Lt Cdr Robert C Davis and Lt Cdr Gayle O Elie, VF-142, USS *Constellation*, 10 August 1967

Issued to the Navy on 12 October 1962, this Phantom II arrived at Miramar for service with VF-121 five days later. It remained with the RAG until 5 June 1963, and then joined VF-193, again at Miramar, just as the unit transitioned from the F-3B Demon to the F-4B – the unit was re-designated VF-142 the following month. BuNo 150431 spent the remainder of its life with VF-142, completing three *WestPacs* up until it was lost on 27 April 1968 whilst on a training flight from CVA-64 during CVW-14's pre-deployment cruise. It had clocked up 1905 flight hours.

12

F-4B BuNo 149411/NK 311 of Lt(jg) Robert P Hickey and Lt(jg) Jeremy G Morris, VF-143, USS *Constellation*, 26 October 1967

Accepted as an F4H-1 on 1 February 1962, this early-build Phantom II initially served with VF-121, before spending short spells with VF-143, VF-21, VF-121 again, VF-114, VF-96, a third spell at VF-121, and VF-154, with whom it completed its first *WestPac* in 1966. There is some contention as to whether the fighter was serving with VF-143 at the time of the unit's MiG kill in 1967, for according to its official service history BuNo 149411 was undergoing Standard Depot Level Maintenance (SDLM) at NARF North Island from January 1967 through to March 1968! These same records note that the jet returned to VF-121 following its overhaul, and then transferred to VF-96 on 28 April 1968 as an attrition replacement for BuNo 150463 (lost in an operational accident on 5 April). Joining the unit halfway through its *WestPac* aboard the *Enterprise*, it was passed on to VMFA-314 (like BuNo 153037, which served with sister-squadron VF-92 during the same deployment) on 1 July 1968. The aircraft flew with the Marines from Chu Lai until written off on 20 December 1968, having completed 1602 flight hours.

13

F-4B BuNo 150629/NK 203 of Lt Cdr Eugene P Lund and Lt(jg) James R Borst, VF-142, USS *Constellation*, 30 October 1967

Although ordered as a 'vanilla' F-4B, this aircraft was one of 12 converted to F-4G specification on the McDonnell production line. Fitted initially with an AN/ASW-13 datalink (later replaced with the improved AN/ASW-21) which, amongst other things, allowed for hands-off landings on carriers that boasted AN/APS-10 radar and AN/USC-2 datalink, this Phantom II was issued to VF-96 in the summer of 1963. Transferred to VF-213 early the following year (when these aircraft were officially redesignated F-4Gs), it completed one *WestPac* with the unit aboard the *Kitty Hawk* in 1965-66. The datalink equipment was removed from the 11 surviving F-4Gs (one was lost in combat to AAA on 28 April 1966) upon their return to the US in mid-1966, and they were in turn redesignated F-4Bs. Transferred to VF-121 in December 1966, BuNo 150639 was in turn briefly used by Air Development Squadron Four (VX-4) at NAS Point Mugu, in California, in June 1967. Returned to the RAG by the end of the month, it was transferred to VF-142 as a replacement for F-4B BuNo 149498/NK 205, which was lost to a SAM on 23 August. Joining the unit halfway through its *WestPac*, aboard the *Constellation*, BuNo 150629 was lost just minutes after claiming a MiG-17 on 30 October. The crew had launched an AIM-7E at a second VPAF fighter, only to see the round prematurely explode less than 200 ft in front of them, sending debris shooting down the jet's starboard engine intake. Coaxing the Phantom II back out to sea, the crew safely ejected near their ship and were rescued.

14

F-4B BuNo 153036/NG 602 of Capt John P Heffernan USAF and Lt(jg) Frank A Schumacher, VF-96, USS *Enterprise*, 9 May 1968

This long-lived Phantom II was accepted by the Navy at St Louis on 16 June 1966 and issued to VF-121 on 21 July. Used by the training unit until 13 December 1967, it then joined VF-96 and embarked with the unit on the *Enterprise* the following month for CVW-9's fourth Vietnam *WestPac*. The aircraft scored an unconfirmed MiG kill with a USAF exchange pilot in the front seat and a Navy RIO in the back on 9 May 1968. It was transferred to VMFA-323 at NAS Cubi Point on 1 July 1968, who in turn passed it on to VMFA-115 at Chu Lai on 3 October. The Phantom II enjoyed a long spell in-theatre with the 'Silver Eagles', remaining forward-deployed with the unit until late 1975. In that time it flew from Cubi Point (again), Da Nang, Naha, on Okinawa, Iwakuni and finally Cubi Point once again. VMFA-115 then transitioned to the F-4J, and BuNo 153036 was in turn sent back to the NARF at North Island for upgrading to F-4N specification. The 191st airframe to be converted as part of Project *Beeline*, the aircraft was in rework from 29 December 1975 to 4 March 1977. Issued to reserve-manned VMFA-321 at NAF Andrews, Maryland, on 6 March, the veteran 'MiG killer' was finally written off in a landing accident at MCAS Yuma, Arizona, on 21 January 1981. BuNo 153036 had deployed with the unit to the Marine Corps air station for live bombing training, and after pulling out following its attack run, the jet developed chronic hydraulic and fuel leaks from its port engine. As the pilot fought to land the crippled fighter back at Yuma, its port wing dropped and the F-4 drifted left of the runway centreline, forcing the crew to eject. By the time of its demise, BuNo 153036 had amassed 4263 flight hours.

15

F-4J BuNo 155553/AE 212 of Lts Roy Cash and Joseph E Kain, VF-33, USS *America*, 10 July 1968

Issued new to VF-33 at NAS Oceana, Virginia, in early 1968 when the unit transitioned from the F-4B to the F-4J, this aircraft served exclusively with the 'Tarsiers' during its five-year career with the fleet. The fighter participated in VF-33's sole *WestPac* (between April and December 1968), aboard the *America*, and subsequently completed two Mediterranean deployments with CVW-6, embarked on the *Independence*. BuNo 155553 was lost in a training accident on 1 December 1972, having completed 1526 flight hours.

16

F-4J BuNo 155875/NK 201 of Lts Jerome E Beaulier and Steven J Barkley, VF-142, USS *Constellation*, 28 March 1970

Accepted by the Navy at McDonnell Douglas's St Louis plant on 10 April 1969, this aircraft joined VF-142 four days later as one of twelve J-models issued to the unit at Miramar as replacements for their combat-weary F-4Bs. On 28 March 1970 it downed a MiG-21 using an AIM-9D. The aircraft continued in service with the 'Ghostriders', completing a second *WestPac* with the unit, aboard the *Enterprise*, in 1971-72. Indeed, it was coming towards the end of its third *WestPac*, again with CVN-65, when an in-flight fire broke out and destroyed the aircraft on 26 April 1973. It had completed 1540 flight hours by that stage, most of which were in combat.

Back cover

F-4D 66-7709/OC of Capt Doyle Baker USMC and Capt John D 'Jack' Ryan USAF, 13th TFS/432nd TRW, Udorn, 17 December 1967

The first of two USMC pilots to claim MiGs whilst flying F-4s on exchange tours with the USAF, Doyle Baker was on his 30th mission over North Vietnam when he claimed a MiG-17 in Route Pak IVA on 17 December 1967. Having previously completed a Vietnam tour with VMFA-513 in 1965, he returned to the 'Corps in July 1968 with 226 combat missions to his credit. Posted to VT-21 at NAS Kingsville, in Texas, as an instructor, Baker related details of his kill to the naval air station's newspaper, *The Flying K*, in October1968;

'It was one of those beautiful days when the visibility was unrestricted. The targets for more than 40 strike aircraft were located in the Hanoi complex, and our four-aeroplane division was assigned as fighter cover for the strike aeroplanes. We were approaching the target when the division leader broke away to identify an approaching aircraft, leaving me leading the second section. Shortly after the leader identified the bogie as a friendly F-105, I spotted a low-flying MiG-17 approaching the flight from the opposite direction. We jettisoned our external fuel tanks and rolled in on the MiG-17 from about 10,000 ft. The MiG spotted our two Phantoms and started a tight turn into the formation.

'I set up my centreline gun pod and opened fire with short bursts of the 20 mm ammunition as soon as the MiG passed in front of the gunsight. I was losing altitude too fast, so I climbed back up to 10,000 ft for a second pass. The MiG kept flying as low as it could, then tuned into us when we started back down again. After the fourth pass, I ran out of ammunition.

'Since I had used all of the 20 mm, I set the switches to fire the AIM-4 heat-seeking air-to-air Falcon missile. The MiG appeared to be heading home, so I climbed back up for an altitude advantage. Still climbing, I ignited the afterburners on the Phantom, rolled the aeroplane and pulled downward, increasing the speed to keep the MiG in sight.

'The forces of acceleration were so great I could hardly see anything, let alone a MiG. The Phantoms were pulling over 11gs, and just 5 or 6 can cause a pilot to black out. My rear seat pilot, Capt Jack Ryan, read off the altitudes as we went through them. Finally, at 500 ft, visibility returned to normal. Travelling at well over 600 kts, with the MiG in sight, missile locked, I fired.

'The Falcon worked perfectly, going directly into the tailpipe and exploding. We broke to the right, overtaking the flaming MiG. The MiG pilot ejected, and enemy gunners immediately began firing. We climbed out of range without being hit.'

There is some confusion as to exactly which F-4D Capt Baker used to down his MiG-17 on 17 December 1967, most published sources stating that it was the aircraft depicted here (66-7709). However, recent research carried out specially for this volume at Maxwell AFB by USAF Historical Research Agency archivist Archie DiFante casts doubt on 66-7709's 'MiG killing' credentials. According to its aircraft history cards, this particular jet was assigned to the 4th TFW at Seymour-Johnson AFB, North Carolina, when Baker claimed his MiG kill. It also spent time on detachment at Kunsan AFB, Korea, in February 1968, but according to its paperwork, the fighter did not serve in South-East Asia at any time. Transferred to the Air Force Reserve in the late 1970s, 66-7709 was handed over (along with 23 other D-models) to the Republic of Korea Air Force in early 1988, and is still reportedly in frontline service as this volume went to press.

Research carried out by Archie DiFante shows that F-4D 66-8719 could have been Doyle Baker's 'MiG killing' mount, as this machine flew with the 432nd TRW at Udorn in 1967. Another long-lived example, this particular aircraft last served with the reserve-manned 457th TFS/301st TFW at Carswell AFB in the late 1980s, as did 66-7709. Indeed, there are published photographs showing both aircraft sat side-by-side on the Carswell ramp in May 1984, and 66-7709 proudly bears a red MiG kill star on its port splitter plate! 66-8719 was then sent to AMARC at Davis-Monthan AFB in January 1989, and according to an 'unofficial source', it was transported to Avon Park, in Florida, in August 1998 to end its days as a range target.

The Authors were unable to contact Doyle Baker to confirm the identity of his 'MiG killing' F-4D Phantom II.

COLOUR SECTION

1

VF-21's *Sundown 111* participated in the unit's 'MiG killing' *WestPac* on CVA-41 in 1965. Note aircraft's unusual configuration of a solitary AIM-7 on the port shoulder pylon and two AIM-9s on the starboard hardpoint (*via B Elward*)

2

Seen in the final weeks of VF-21's 1965 *WestPac*, BuNo 151482 flies over South Vietnamese jungle armed with a full load of 12 Korean War-vintage M117 750-lb bombs (*via Peter Mersky*)

3

The flightdeck of *Coral Sea* is arranged in orderly fashion for the vessel's portcall to Hawaii in January 1965. Within weeks the vessel would be participating *Flaming Dart I* strikes (*Don Willis*)

4

Switchbox 104 has just recovered back aboard CVA-43 following a routine BARCAP (*Don Willis*)

5

A section of bombless F-4Bs from VF-161 'hit the tanker' after attacking their target in North Vietnam in late 1966 (*via Peter Davies*)

6

This trio of F-4Bs from VF-96 are all armed with Zuni rocket pods and AIM-9Bs (*via Peter Davies*)

7

The 'MiG killing' F-4B of Lt Charles Southwick and Ens James Laing in late 1966 (*via Brad Elward*)

8

An-2 'killer' BuNo 153019 enjoyed a long fleet career, including *WestPacs* with VF-111 in 1971 and 1973 (*via Angelo Romano*)

9

VF-102's AE 112 (BuNo 155540) was lost to AAA on 25 July 1968. Pilot Lt C C Parish was killed and RIO Lt R S Fant captured (*via Brad Elward*)

10

This VF-33 F-4B took part in the 1966 Paris air-show, its assigned pilot being future 'MiG killer' Gene Tucker, who bagged a MiG-21 in August 1972 whilst serving with VF-103 (*via Peter Davies*)

11 and 12

VF-33's 'MiG killer' is seen with varying styles of fuselage and tail decoration at later stages in its career with the unit. BuNo 155553 served exclusively with the 'Tarsiers' until lost in a training accident on 1 December 1972 (*both via A Romano*)

13

BuNo 155875 claimed the only MiG kill between July 1968 and January 1972 (*via A Romano*)

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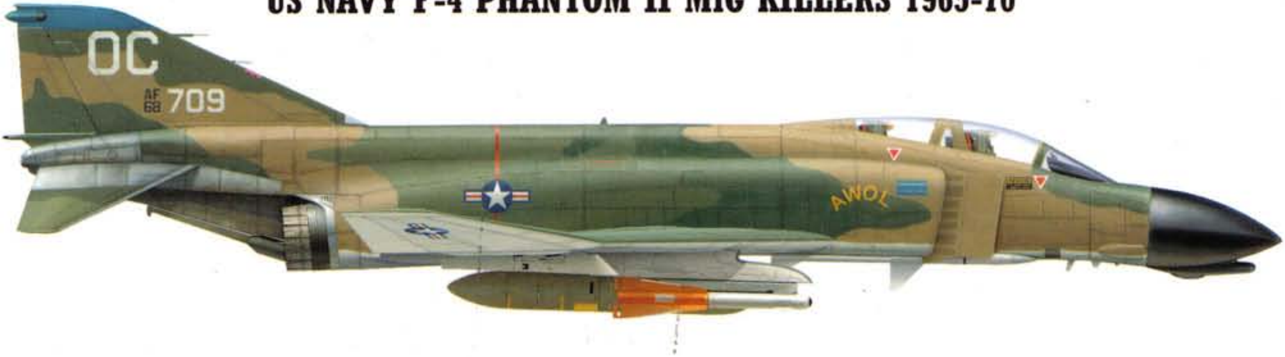
US NAVY F-4 PHANTOM II MiG KILLERS 1965-70



Despite flying the world's most modern fighter interceptor armed with state-of-the-art guided missiles, US Navy F-4 crews initially struggled to compete with their North Vietnamese counterparts, who were far less experienced, and equipped with inferior types such as the MiG-17 and MiG-21. As this volume reveals, the apparent lack of success was due to a number of important factors ranging from flawed tactics to chronically unreliable missiles. Yet, despite these serious problems, and handicapped by strict rules of engagement that effectively nullified any tactical advantage gained by having weapons that could hit targets beyond visual range, Phantom II crews prevailed. Less than ten naval aircraft were downed by MiGs in the first five years of the war, thus proving that the fighter crews had indeed done their job; at least 15 Vietnamese aircraft were destroyed by Navy F-4 crews during that time. Fighting 'MiGs, missiles and AAA', as well as the failings of their own technology, this is the story of the early 'MiG killers' of the Vietnam War.

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